



**OVERCOMING IMPEDIMENTS TO YOUTH PARTICIPATING
IN HUNTING: AN INTERIM EVALUATION OF PILOT
PROGRAM IMPLEMENTATION EFFORTS**

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TABLE OF CONTENTS

	<u>Page</u>
LIST OF TABLES	iii
ACKNOWLEDGMENTS	v
EXECUTIVE SUMMARY	vi
INTRODUCTION	1
BACKGROUND	1
OVERALL 4-STAGE EVALUATION STRATEGY	3
STAGE 3: EVALUATION OF PILOT PROGRAM IMPLEMENTATION	4
HOW IS IMPLEMENTATION PROCEEDING?	4
Recruitment and Selection of Master Hunter Volunteers	4
Screening and Selection of Apprentices	12
Training Workshops for Master Hunters	20
Notification of Youth Apprentices	25
Pairing of Master Hunters and Apprentices	29
Communication Between Master Hunters and Program Sponsors	34
Subsequent Contacts Between Master Hunters and Apprentices	37
Termination of the Mentoring Process	42
ARE SHORT-TERM GOALS BEING MET?	43
Apprenticeship Experiences	43
Social Support	47
WHAT IS THE CURRENT NEED TO CONTINUE THE APPRENTICE HUNTER PROGRAM?	51
Demand for the Program by Apprentices	51
Trends in Numbers and Characteristics of SEC Graduates	52
Trends in the Proportion of Potential Candidates for the Apprentice Hunter Program	55
Projected Demographic Changes in the State Population	58

TABLE OF CONTENTS (cont.)

	<u>Page</u>
Projected Number and Characteristics of SEC Graduates	59
Projected Proportion of SEC Graduates who will be Candidates for the Program	64
Estimated Number of Candidates for the Apprentice Hunter Program, 1994-2005	65
Supply of Master Hunter Volunteers	70
Cost-Benefit Analysis	71
Unquantified Costs and Benefits	71
Preliminary Estimates of Quantified Costs	75
Cost Per Apprentice Under Different Scenarios	76
Preliminary Estimates of Quantified Benefits	78
Balancing the Equation	82
SUMMARY AND CONCLUSIONS	83
RECOMMENDATIONS	86
LITERATURE CITED	88
APPENDIX A: Types of activities in which master hunter/apprentice pairs have engaged in Regions 3 and 8 as part of New York's Apprentice Hunter Program	90
APPENDIX B: Types of hunting in which master hunter/apprentice pairs have engaged in Regions 3 and 8, and types of game hunted, as part of New York's Apprentice Hunter Program	91
APPENDIX C: Types of hunting-related skills being developed by youth apprentices in New York's Apprentice Hunter Program	92
APPENDIX D: Calculation for estimating the number of candidates (youth and adults) who would qualify for an Apprentice Hunter program in any given year	93

LIST OF TABLES

<u>Table</u>	<u>Title</u>	<u>Page</u>
1	Major stages to be completed during the implementation of the pilot Apprentice Hunter Program to provide social support and apprenticeship experiences for youth who have an interest in hunting, but who are likely to participate only marginally without programmatic intervention (from NYSDEC 1990:10-24)	5
2	Recruitment and selection of master hunters: a summary of planned actions, initial actions implemented, changes made due to the evaluation, and most effective actions	7
3	Screening and selection of apprentices: a summary of planned actions, initial actions implemented, changes made due to the evaluation, and most effective actions	13
4	Training workshops for master hunters: summary of planned actions, initial actions implemented, changes made due to the evaluation, and most effective actions	21
5	Notification of youth apprentices: planned actions, initial actions implemented, changes made due to the evaluation, and most effective actions	26
6	Pairing of master hunters and apprentices: summary of planned actions, initial actions implemented, changes made due to the evaluation, and most effective actions	30
7	Communication between master hunters and program sponsors: summary of planned actions, initial actions implemented, changes made due to the evaluation, and most effective actions	35
8	Subsequent contacts between master hunters and apprentices: summary of planned actions, initial actions implemented, and changes made to the evaluation	38
9	Model for calculating the number of potential candidates for the Apprentice Hunter Program in a given year	53
10	Number of individuals graduating from New York State sportsman education (gun) courses from 1978 to 1991, and percent annual change	54
11	Number and percentage of graduates from New York sportsmen education (gun) courses in 1978 and 1983 by gender and age . .	56
12	Proportion of candidates qualified for the Apprentice Hunter Program by ageclass and gender in Regions 3 and 8 in 1978, 1983, 1991, and 1992	57

LIST OF TABLES (cont.)

<u>Table</u>	<u>Title</u>	<u>Page</u>
13	Projected changes in the percentage of persons by ageclass and gender in the New York State population aged 12-40 for the period 1980-2005	60
14	Projected proportion of Sportsmen's Education Course graduates by gender and ageclass for the period 1994-2005	63
15	Proportion of Sportsmen's Education Course graduates, by ageclass and gender, who were candidates for the Apprentice Hunter Program in 1992	66
16	Estimate of the statewide number of candidates (youth and adults) for the Apprentice Hunter Program, 1994-2005	67
17	Projected revenues from the Apprentice Hunter Program	79

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OVERCOMING IMPEDIMENTS TO YOUTH PARTICIPATING IN HUNTING: AN INTERIM EVALUATION OF PILOT PROGRAM IMPLEMENTATION EFFORTS

EXECUTIVE SUMMARY

Introduction and Background

This report is part of a series presenting findings from the formative evaluation (Kraus and Allen 1987) of a pilot program developed by the New York State Department of Environmental Conservation (DEC) to overcome impediments to youth participating in hunting (see Pomerantz and Decker 1986, Enck et al. 1988, Enck and Decker 1990, Enck and Brown 1992). The evaluation is being conducted by the Human Dimensions Research Unit at Cornell University.

The Apprentice Hunter Program is being piloted in DEC Regions 3 and 8 before a decision will be made about putting it into action statewide. The goal of the program is to provide hunting apprenticeship experiences and social support for hunting to youth ≤ 17 years of age who have an interest in hunting, but who are likely to drop out. Previous research had shown that lack of apprenticeship and social support are 2 of the most important factors affecting continued participation in hunting (Brown et al. 1981, Decker et al. 1984, Purdy et al. 1985, Purdy and Decker 1986, Purdy et al. 1989).

This report assesses how well implementation of the pilot is proceeding and suggests changes needed to ensure that the objectives of the pilot program can be met. Specific objectives of the report are to: (1) assess whether the implementation stages described in the planning document (NYSDEC 1990) are proceeding as planned, (2) determine the degree to which short-term goals are being met with respect to provision of apprenticeship opportunities and social support for hunting, and (3) assess the current need for continuing the Apprentice Hunter Program.

How is Implementation Proceeding?

Recruitment and Selection of Master Hunter Volunteers

Master hunter volunteers provide mentoring through 1-on-1 contact with youth apprentices during a year-long program. Initial efforts to recruit master hunters involved: (1) asking sportsmen's education course (SEC) instructors to identify potential master hunters, and (2) making presentations to County Sportsmen's Federation meetings. These efforts largely were unsuccessful. Barriers to participation by potential master hunters in Region 3 included: (1) liability issues, (2) being too busy to take on an apprentice, (3) expected costs to be incurred by master hunters, and (4) communication problems. In Region 8, potential master hunters were concerned about: (1) not getting along with their apprentice, (2) the apprentice living too far away, and (3) being too busy.

Several actions were taken to overcome barriers in both Regions. Master hunters were given employee liability status by making them official DEC volunteers. The time between recruitment and training of master hunters was shortened. Implementation staff also began to communicate more directly with

potential master hunters instead of relying on Federations to relay information to local sportsmen's clubs. Also, the process of pairing master hunters and apprentices was altered to give master hunters more opportunity for input.

Based on evaluation findings, additional techniques also were developed by implementation staff to recruit master hunters. Recruitment was expanded to include efforts by well-informed county coordinators and conservation networks within Coalitions for Youth established in each Region. The most effective techniques were: (1) mass mailings to groups of hunters (e.g., turkey hunters), (2) articles in publications of state conservation organizations, and (3) personal contacts. Coalitions for Youth hold much promise, but have not been in effect long enough to evaluate.

Screening and Selection of Apprentices

This stage depends on cooperation of SEC instructors to distribute screening instruments in their classes and to send completed instruments to program staff. Screening began in Region 3 in 1990, but communication problems led to limited knowledge of the program (and hence limited cooperation) among instructors. Attempts were made to overcome the communication problems in 1991 by having the statewide sportsmen's education coordinator write to all SEC instructors in Region 3 asking for their assistance. However, cooperation increased only minimally. In mid 1991, a decision was made to expand the pilot to Region 8, and instructors who were expected to teach a course after 1 September were sent screening instruments.

In 1992, implementation staff hand-delivered instruments to most SEC instructors in both Regions. However, cooperation from instructors still was quite low. In June 1993, about 10,000 screening instruments and postage-paid return envelopes were mailed to all instructors in both Regions. Still fewer than 50% of SEC graduates completed screening instruments. Over the 4-year period 1990-93, 1,416 instruments were completed in Region 3. In Region 8, 2,155 instruments were completed during 1991-93.

After instruments were returned to program staff, 2 major problems occurred with respect to identifying potential apprentices. Evaluation staff applied only partial selection criteria for the first 2 years, and did not fully modify screening instruments until 1993. Also, implementation staff were confused about whether to invite all youth identified as potential apprentices, or whether they should invite only those youth who did not have family members with whom to hunt.

Because of these problems, only a small pool of potential apprentices was identified and even fewer were invited to participate during 1990-92. In Region 3, 164 youth candidates were identified. Fifty nine of the 164 said they already had someone with whom to hunt, and were not invited to participate although they were qualified. Of the remaining 105, only 19 (18%) agreed to participate. Most youth who declined to participate had other priorities for their time, or their parents did not approve of their participation.

In Region 8, 139 candidates were identified during 1991-92. Only 39 (from the Monroe County/Rochester) area were contacted. Seventeen of the 39 said they already had someone with whom to hunt, and they were not invited to participate. Of the remaining 22, only 6 agreed to participate. As in Region 3, most of those who declined to participate had higher priorities for their time.

Auxiliary methods were developed to screen youth who (1) attended an SEC but did not complete a screening instrument, or (2) did not attend an SEC but who were interested in hunting. Screening by telephone and mailing brochures to SEC graduates who did not complete a screening instrument proved to be too costly and ineffective for DEC staff to continue. Personal contacts seemed to be the most effective of 10 other auxiliary methods tried. Posters, newspaper articles, and letters to youth were ineffective because youth had to make a self-assessment about their qualifications, and had to take the effort to contact implementation staff about participating. For these reasons, screening of SEC attendees will continue to be an important method of identifying potential apprentices, and personal contacts by a broad network of persons who are familiar with the program seems to be the most effective auxiliary method.

Training Workshops for Master Hunters

All master hunter candidates received training to ensure they fully understood the concepts of apprenticeship and social support within the context of the program. Master hunters participated in a 2.5 hr session which covered background about the program, its purpose, safety and liability considerations, mentoring, apprenticeship, and social support. A broad range of support materials were provided. Post-workshop comments by master hunters indicated they believed the training was helpful and worthwhile (Jacobs and Nash 1993). However, follow-up telephone interviews revealed that more information was needed about the purpose of the program. In addition, many master hunters apparently did not fully understand the concepts of apprenticeship and social support. Additional experiential training is needed through which master hunters can learn how to provide these elements. Workshops should be increased to 2 days to allow master hunters to hear what they are to do, act it out, have their actions critiqued, and learn new skills and techniques.

Notification of Youth Apprentices

Initially, candidates who were identified through screening instruments were invited by mail to participate in the program. Response was low because (1) their interest in hunting was relatively low compared to other activities, (2) family members did not support their involvement in hunting, (3) they were too young to follow up on their own, or (4) length of time was too long between when they attended the SEC and when they were invited to participate.

Telephone interviews of SEC graduates listed on course rosters allowed candidates to be notified as soon as they were screened. However, it was too difficult for staff to assess whether selection criteria were met while the interview was in progress. Some SEC graduates listed on course rosters did

not provide telephone numbers and were mailed brochures about the program. Few of these youth contacted staff about the program because they had to self-assess their qualifications and make an effort to follow up on their interest.

Given the barriers to participation by potential apprentices, staff efforts would be most useful if they were aimed at making the initial contact and invitation as easy on the youth as possible. This precludes self-assessment by youth and requiring that youth make an effort to contact implementation staff. The most effective methods of notifying candidates are telephone contacts or informational mailings followed closely by telephone follow-ups from staff.

Pairing of Master Hunters and Apprentices

By mid 1993, 25-30 pairs were matched in each of the Regions. Initially, staff held informational, "get-acquainted" meetings for master hunters, apprentices, and apprentices' parents. These meetings provided an opportunity for all participants to learn more about the program, a forum for expressing concerns and needs, and an "official starting point." However, these meetings often were not convenient for very many pairs to attend, and some parents and master hunters wanted to have more input in the pairing process.

The pairing process was subsequently changed from group meetings to 1-on-1 pairing. The make-up of specific pairs was negotiated among master hunters, apprentices, and apprentices' parents using implementation staff as facilitators. The best approach seemed to be for staff to attend the initial meeting between master hunters and apprentices and their families. This ensured that all questions about the program could be answered adequately, and having staff there gave an "official feel" to the program.

Communication Between Master Hunters and Program Sponsors

Since summer 1992, staff have produced and mailed a bi-monthly newsletter to all program participants, including apprentices' parents. Although this newsletter covers a wide range of program topics, participants have indicated that they have other, unmet communication needs. Many desired more frequent communication with staff. Some desired to meet regularly with other program participants to discuss their experiences.

Field days and picnics were held to help meet these needs. The additional communication seemed to help a few master hunters better put apprenticeship and social support into action. It also made the program feel more like a coordinated effort instead of individuals all "doing their own thing." However, only a small number of pairs took advantage of these events.

Subsequent Contacts Between Master Hunters and Apprentices

Contacts between master hunters and apprentices are the "meat" of the program. However, many pairs, especially in Region 3, will not achieve the goal of meeting 15 times during their year together. Pairs in Region 3 will average about 10-11 meetings in 12 months whereas pairs in Region 8 will

average about 15 meetings. A few pairs in each Region have met only once or twice in their first 6 months whereas others have met 2-3 times weekly.

Some pairs in both Regions are having trouble finding mutually convenient times to meet. Other pairs need encouragement or reminding about their responsibility to meet. Master hunters and apprentices have said they would be willing to attend group activities if they were made available, but attendance has been low at program-sponsored activities.

During the 1992-93 hunting season, pairs hunted only about once every 2 months. Two major impediments to hunting were identified. First, apprentices who are 12-13 years old need to be accompanied by a parent or guardian in the field, but it is difficult to get the apprentices' parents involved. Second, many youth have limited or no access to hunting equipment. A legal waiver is being pursued to overcome the first impediment. To overcome the second, loans or donations of hunting equipment are being solicited.

Termination of the Mentoring Process

Formal termination of the pairing process is necessary because: (1) a point is reached when apprentices have acquired the skill and knowledge to succeed on their own, and breaking the formal tie to master hunters will allow apprentices to grow in an uninhibited manner, and (2) additional mentoring can stifle further growth by apprentices to the point where they become resentful of their master hunters. Although the pairs may continue to interact, they need to do so under conditions different from when they first started their relationship. At this time, no termination process has been developed.

Are Short-term Goals Being Met?

Apprenticeship Experiences

Previous studies (e.g., Decker et al. 1984, Purdy et al. 1985, Purdy and Decker 1986) found that individuals were more likely to solidify their interest in hunting and become committed hunters if they experienced apprenticeship activities through which they "learned the ropes" of hunting. Through these activities, master hunters and apprentices also develop mentoring relationships.

Interviews with master hunters and apprentices indicated that 76% of pairs in Region 3, and 60% in Region 8, believed that apprentices were learning valuable hunting skills such as identifying wildlife sign and other "how to's" related to hunting. In those cases where apprentices were not learning hunting skills, the pairs had not met very often.

Sixty-three percent of pairs in Region 3 and 71% of pairs in Region 8 indicated that they were developing a sense of rapport, friendship, or camaraderie. Those pairs who were not developing this kind of mentoring relationship said they had not met very many times, or that the apprentice was "too shy."

Master hunters also were asked whether their apprentices had shown interest in making hunting-related decisions, and apprentices were asked whether master hunters had provided opportunities for apprentices to make decisions. In Regions 3 and 8, 29% and 55% of pairs, respectively, said that youth showed interest in making decisions and that master hunters were providing decision-making opportunities. Master hunters tended to provide opportunities for apprentices to make decisions about the types of activities apprentices wanted to do or where they wanted to go, rather than decisions dealing with safety and ethical issues. Although both kinds of decisions are important, master hunters should be encouraged to provide more opportunities for apprentices to make decisions about safety and ethical issues because these are most likely to facilitate apprentices' maturation as hunters.

Based on interviews with apprentices and master hunters, it is unlikely that short-term goals relative to apprenticeship can be met unless the following actions are taken: (1) additional emphasis should be placed on helping master hunters better understand their responsibilities regarding apprenticeship when they are trained, (2) master hunters should receive frequent reminders about their responsibilities as well as helpful information about how those responsibilities can be met, and (3) greater emphasis should be placed on helping master hunters encourage their apprentices to make important decisions about safety and ethical issues.

Social Support

Social support for hunting also plays an important role in helping youth develop and build on their interest in hunting. Social support pertains to the relationships between youth who are interested in hunting and the person(s) who influence development of that interest, initiate the youth into hunting, and accompany the youth afield (Purdy et al. 1985, Purdy and Decker 1986). Social support is most influential if the relationship involves persons who are important to the youth (e.g., family members, same age peers), rather than with persons who have weaker social linkages to the youth.

The concept of social support has been difficult for program participants and implementation staff to comprehend and put into action. One of the master hunters' most important tasks is to help their apprentices recognize that participation in the program is a sign of strength rather than inadequacy (i.e., it is not a remedial program). Another important task for master hunters is to develop hunting-supportive, social linkages between the youth and others in the various settings in which the youth participates. The number and quality of linkages among individuals within and between settings help determine whether an apprentice's interests can be fully developed (Garbarino 1982). Finally, the social support system should be adaptive to the changing needs of the apprentice (U.S. National Commission 1980).

Only 17% of master hunters in Region 3 and 25% in Region 8 involved their apprentices' family in program activities. Even fewer master hunters involved their apprentices' established friends in the pair's activities. Those who involved apprentices' family members or friends did so by inviting them to accompany the pair to purchase hunting equipment, target shoot, attend a fur auction, attend a sportsmen's show, or hunt. Master hunters in both

Regions were somewhat more likely to involve their own friends than they were family and friends of their apprentice. However, because those persons are rarely important in the lives of the apprentices, positive hunting-related interactions between them and the apprentices are less helpful than positive hunting-related interactions between the apprentices and the apprentices' family members and friends.

Interviews with master hunters and apprentices indicated strongly that short-term goals pertaining to social support are not being met. Program success may not be possible unless more emphasis is placed on the concept of social support during master hunter training, and unless more programmatic efforts are made to encourage or assist master hunters in meeting their responsibilities regarding social support.

What is the Current Need to Continue the Apprentice Hunter Program?

Demand for the Program by Apprentices

Estimating annual demand for the program certainly is not an exact science. I developed an estimation model based on past trends and future projections of the number of persons who graduate from SEC's annually, the proportion of SEC graduates by age and gender categories, and the proportion of SEC graduates who would be potential candidates for the program. Future trend data were modified when possible to reflect expected changes in demographic and social factors in the overall population.

Each year for the next 12 years (i.e., through 2005), between 13,700 and 14,600 candidates could be identified via screening instruments distributed at SEC's statewide. Identifying this many candidates depends on much better distribution and completion of screening instruments than was experienced during the course of the pilot. It also depends on being able to contact all candidates, which is never possible because of people moving, or not putting legible addresses or telephone numbers on the screening instruments. In addition, experience has shown that up to one-half of the candidates may decline to participate in the program.

Supply of Master Hunter Volunteers

Supply of master hunters involves: (1) retention of master hunters who will be finishing the year-long pairing with their current apprentice, and who will be ready to take on a new apprentice in the future, and (2) recruitment of new master hunters to be paired with apprentices identified in the future. Discussions with master hunters who are currently in the program indicated that 70-80% will continue in the program after their initial apprentice "graduates." This retention rate, coupled with the relatively low recruitment experienced to date, likely will result in a short-fall of master hunters. Coalitions for Youth being established in each pilot Region will enhance recruitment efforts, but additional support from organized sportsmen's groups may be necessary.

Cost-Benefit Analysis

Both economic and noneconomic costs and benefits are associated with the program. All participants (including apprentices' parents) experience and recognize both types of costs and benefits. Perhaps the greatest recognized, noneconomic benefit is the opportunity for apprentices to build on their interests in hunting and conservation that they otherwise would not have had. One of the most important noneconomic costs to the apprentices is the disappointment associated with unmet expectations (e.g., 12-13 year-old apprentices joined the program to become hunters, but they cannot hunt unless their parents accompany the pair afield). The impact of their disappointment on future hunting participation is not known, but should be assessed as the evaluation continues.

Parents said the program gave the children a way to learn about hunting that they could not provide, the program satisfied some single mothers' need for a male role model for their sons, and it even helped some youth become better students. However, parents also recognized that hunting equipment can be expensive, and that there are opportunity costs associated with participation in the program.

Master hunters reported the program gave them a chance to gain self-esteem as a mentor, provided a good experience until their own children were old enough to hunt, and that they enjoyed passing on the tradition of hunting. The mentors also incurred out-of-pocket expenses and had opportunity costs associated with their participation.

Participating groups also experienced benefits and costs. Some groups experienced increased publicity for their clubs or events. Some even gained new members. Others indicated that by offering their facilities they felt like they were "doing something for hunting." However, some group members had to bear the cost of free or reduced-cost apprentice participation. Also, a very few groups spent considerable energy posturing to receive credit for supporting the program. That posturing led to hard feelings and political backlash between some groups.

One of the most important noneconomic benefits to DEC is the establishment of a working relationship with affiliates of the Coalitions for Youth. New relationships are being forged between DEC and groups with which DEC has not had much interaction in the past. DEC seems to be benefitting from having these groups better understand each other's youth programs (including DEC's), and from recognition by these groups of DEC's role as catalyst to help these programs be more successful.

Preliminary Estimates of Quantified Costs

DEC's expected economic costs were calculated based on estimates of the number of apprentices expected to participate annually, and known costs experienced through the pilot program. A best estimate of the cost to implement the program statewide is \$128,800 annually if 4 program coordinators were hired to implement the program (i.e., 1 for every 2-3 Regions). Up to 1,300 apprentices can be expected to complete the program each year (based on

the number of apprentices that will be identified and their likelihood of accepting an invitation to participate). Thus, the program could cost about \$99 per youth if all apprentices continued to hunt, \$124 if 80% of apprentices remained in the hunter population, \$165 if 60% were retained, and \$248 if only 40% continued to hunt. This cost could be reduced substantially if the number of apprentices was increased by: (1) using auxiliary methods to identify additional potential apprentices, and (2) including adult apprentices in the program.

Preliminary Estimates of Quantified Benefits

Depending on the proportion of apprentices who continue to purchase a small game license after completing the program, DEC can expect \$5,720-\$11,440 in increased revenues in the first year after the program is expanded statewide. This would result in \$296,670-\$592,200 in accumulated revenues to DEC over a 10-year period.

Obviously, costs exceed the amount of revenues that can be expected over the first 10 years. However, all programs have start-up costs, and may take many years before they reach a "break-even" point. For the Apprentice Hunter Program, the break-even point likely will come after apprentices begin having children, and those children take up hunting. This could be experienced relatively quickly if adults were included in the program. Children of those adults are more likely to become hunters if their parent(s) are in the program. Thus, immediate revenues could be experienced beyond just those from the adults themselves. Some of the unquantified benefits off-set some costs as well. The degree to which this is true depends on the weight that is placed on those unquantified benefits.

Balancing the Equation

Several actions can be taken to increase the likelihood that the program will pay for itself just from the perspective of quantified costs and benefits:

- (1) offer the program to adult apprentices (adults likely would purchase big game/small game combination licenses or sportsman licenses which would increase revenues at a much faster rate than indicated in the estimates described above;
- (2) encourage adult apprentices to involve their children (this could be accomplished at no extra cost to the program if children accompany their parents and their parents' master hunter);
- (3) make additional effort to identify apprentices via auxiliary methods;
- (4) work more closely with Cornell Cooperative Extension to enhance program implementation efforts and share costs (i.e., use the Sportfishing and Aquatic Resources Education Program [SAREP] as a model);

(5) improve on the 20% participation rate among potential apprentices identified via screening instruments; and

(6) charge apprentices, master hunters, and/or sponsoring clubs for their participation in the program.

Summary and Conclusions

Implementation of the Apprentice Hunter Program has been a learning experience for all involved, and the formative evaluation process has enhanced the ability of implementation staff to build on what has been experienced. Mid-course changes that were made in several of the implementation stages improved effectiveness of those stages and increased opportunities for the program to succeed.

The following insights were gained:

- The most advantageous way to recruit master hunters into the program is to use multiple recruiting methods which reach a wide audience of potential master hunters and which take advantage of (1) personal contacts, (2) mass mailings to licensed hunters, or (3) articles in specific organizations' newsletters.
- Screening of SEC attendees will continue to be an important method of identifying potential apprentices, and personal contacts will be the most effective auxiliary method. Most other auxiliary methods are not effective because they require (1) self-selection by the potential apprentice, and (2) extra effort on the part of the potential apprentice to contact DEC about the program. In addition, because of the difficulties involved in identifying potential youth who have not yet taken an SEC, the program will benefit from additional effort being expended on making the program known to adults who are in the best position to identify potential apprentices (i.e., through Coalitions for Youth).
- Success and cost of the program will be increased by providing master hunters with additional training about (1) the purpose of the program, and (2) how they can best provide apprenticeship and social support to the youth. The most effective training would be experiential in nature, and would involve group discussion techniques or role playing during which master hunters' understanding of apprenticeship and social support are confirmed or refuted. Additional hands-on skills development would improve the usefulness of the master hunter training workshops.
- The most effective methods of notifying potential apprentices appear to be (1) direct telephone contacts, or (2) mailings followed closely by telephone follow-ups from implementation staff to the youth.
- Changes in how master hunters and apprentices are paired have placed added responsibilities on master hunters including (1) master hunters have become the official link between the program and apprentices' parents (i.e., master hunters and not implementation staff have become

the official program representative), and (2) master hunters must help "sell" the program and must answer questions from the apprentices' parents about the program. These added responsibilities further demonstrate the importance of enhancing master hunter training to address these responsibilities.

- The program can be enhanced by providing more frequent communication between implementation staff and program participants. Also sponsorship of additional group activities for participants would provide opportunities for them to meet with other program participants and discuss their experiences. Much of this increased communication could be accomplished by volunteer county coordinators.
- Many master hunters and apprentices likely will not achieve the goal of meeting 15 times during their year-long program. Some participants have suggested that group activities sponsored by the program would help them achieve the requirement of getting together for 15 activities during the year. Additionally, such program sponsorship would give more of an official program "feel" to the implementation process.
- Short-term goals pertaining to apprenticeship and social support are not being met fully. The most important impediment is a lack of understanding of these concepts among master hunters. Master hunters can become better mentors if they are provided additional training in the concepts of apprenticeship and social support.
- Demand by apprentices is likely to exceed the number of master hunters. Additional efforts are needed to ensure that enough master hunters can be identified and trained. The Coalitions for Youth being established in the 2 Regions may provide a mechanism for identifying additional master hunters.
- A wide range of potential costs and benefits are being accrued by all participants. Some of the most important benefits to apprentices are enhanced self-esteem and confidence. Master hunters also develop enhanced self-esteem, and seem to enjoy taking actions to help pass the hunting heritage on to the next generation of hunters. One of the most important noneconomic benefits being accrued by DEC is the establishment of working relationships with affiliates of the Coalitions for Youth.
- In economic terms, the program may not pay for itself until after the first 10 years unless several important actions are taken to reduce costs and increase the number of apprentices who participate.

Recommendations

1. Distribute the screening instrument to the SEC (gun) instructors with other SEC materials until the screening instrument can be incorporated into the exam. Encourage SEC instructors to administer the screening instrument early in the SEC as a way of getting background information from the students. In addition, describe and promote the Apprentice Hunter Program during SEC instructor training workshops.

2. Continue to develop sound mechanisms for identifying and contacting individuals who are in the interest stage-of-hunting-adoption, but who do not have the opportunity to attend a SEC.
3. Use telephone contacts to invite screened candidates to participate in the program.
4. Develop a formal curriculum and handbook for the master hunter training workshops which emphasizes the concepts of apprenticeship and social support, and which uses experiential (i.e., hands-on) training to get the concepts across.
5. Provide a "refresher" course or event for master hunters where they can learn additional information about how they can provide apprenticeship and social support for youth. Feature successful experiences of other master hunters.
6. Collect gender data on the SEC rosters so better population modeling of hunters can be made.
7. Continue to develop Coalitions for Youth. Concentrate on 4 uses of these Coalitions from the perspective of the Apprentice Hunter Program: (1) as a mechanism for identifying candidate apprentices who have not yet attended an SEC, (2) as a mechanism for communicating with potential master hunters about the program, (3) as a set of organizations which master hunters can take advantage of when planning activities with their apprentices, and (4) as a means to offset program costs.
8. Move many of the implementation efforts to sportsmen's groups. Much of the ground work has been laid for making the program a success. Sportsmen groups could take over much of the daily communication and event planning now being conducted by implementation staff, and DEC could continue to provide overall coordination and liaison with SEC instructors.
9. Complete the evaluation phase of the pilot program with the current cohort of apprentices and master hunters. Survey current apprentices at the end of their year of participation to determine their attitudes about hunting and their stage of hunting adoption. Re-survey current apprentices after 2 years. Survey candidates who did not agree to participate to determine their attitudes about hunting and their stage of hunting adoption. Resurvey these individuals after 2 years, and compare this group with those who participated in the program.

**Overcoming Impediments To Youth Participating In Hunting:
An Interim Evaluation Of Pilot Program Implementation**

INTRODUCTION

This report is 1 of a series presenting findings from the formative evaluation (Kraus and Allen 1987) of a pilot program developed by the New York State Department of Environmental Conservation (DEC) to overcome impediments to youth participating in hunting (see Pomerantz and Decker 1986, Enck et al. 1988, Enck and Decker 1990, Enck and Brown 1992). Specifically, this report presents findings at a mid-point through implementation of the pilot program. This and other brief reports to be prepared during implementation of the pilot program will provide periodic feedback on how well implementation is proceeding and any changes needed to ensure that the objectives of the pilot program can be met.

The purpose of this report is to evaluate implementation efforts to date in the 2 pilot areas--Regions 3 and 8. Specific objectives are to: (1) assess whether the implementation stages described in the planning document (NYSDEC 1990) are proceeding as planned, (2) determine the degree to which short-term goals are being met with respect to provision of apprenticeship opportunities and social support for hunting, and (3) assess the current need for continuing the Apprentice Hunter Program.

BACKGROUND

Research by the Human Dimensions Research Unit (HDRU), Department of Natural Resources, Cornell University has identified that lack of social support for hunting, especially by family members, and lack of hunting apprenticeship opportunities are 2 of the most important impediments to

participation in hunting for those individuals who have an interest in hunting (Brown et al. 1981, Decker et al. 1984, Purdy et al. 1985, Purdy and Decker 1986, Purdy et al. 1989). Hunting participation has declined in New York State since the early 1980's. The number of persons attending sportsmen's education courses (SEC's), which is an index to hunting recruitment, has declined more than 50% since 1980. In addition, the number of hunting licenses sold in the state, which is an index of hunting retention, has declined about 30% since 1982. Brown et al. (1987) suggested that these declining trends in hunting participation will continue without programmatic intervention from DEC.

Based on this information, a DEC task force was formed in 1987 to design a pilot program that would provide social support and apprenticeship opportunities for young SEC graduates (≤ 17 years old) in southeastern New York (DEC Region 3). Youth, rather than adults, were chosen as potential participants in the pilot program because youth represent the future hunting population in New York, and constitute about 50% of SEC graduates annually. DEC selected Region 3 as the initial pilot area for implementation because the relatively large urban/suburban population in the area was expected to provide a large number of youth who had an interest in hunting (i.e., attended a SEC), but who did not have social support for hunting or hunting apprenticeship experiences.

In mid 1992, the pilot program was expanded to Region 8 in western New York. This Region was added to the pilot effort to respond to pressure from organized sportsmen's groups, offset an inauspicious start in Region 3, replicate the experimental aspects of the program, and determine the types of

potential differences in successes and problems that could be expected in a part of the state that was more rural than Region 3¹.

OVERALL 4-STAGE EVALUATION STRATEGY

We are using a formative evaluation strategy which provides constant review and assessment of effectiveness during all stages of the pilot from program development through implementation (Kraus and Allen 1987). This strategy provides opportunities to modify or strengthen the program as it is being developed and implemented. It also provides opportunities for understanding why various aspects of the program succeeded or failed.

Our application of this evaluation strategy has 4 stages:

(1) Theory application evaluation - the process of examining whether a program is based on an appropriate model developed from theories and empirical evidence for the specific context in which the program is to be conducted. This stage has been completed, and was described in Enck et al. (1988).

(2) Program design evaluation - the process of examining a proposed program design prior to implementation to determine if the design adheres to the conceptual model. This stage has been completed, and was described in Enck and Decker (1990).

(3) Program implementation evaluation - the process of systematically monitoring the program as it is being put into effect. Initial evaluation findings were described in Enck and Brown (1992); subsequent findings are described in this report.

(4) Program outcome evaluation - the process of determining the impacts of a program and the reasons for its success or failure. This stage will be initiated in 1994 when youth who have gone through the program will be contacted to ascertain their future hunting intentions. These individuals will be recontacted in 1996 to determine whether they continued to hunt after completing the program.

¹Although Region 8 was chosen originally for its rural character, implementors in that Region concentrated on finding youth in the Rochester metropolitan area during the first year of implementation because they believed they could find a large number of apprentices and master hunters in a relatively small geographic area.

STAGE 3: EVALUATION OF PILOT PROGRAM IMPLEMENTATION

Systematic monitoring of the pilot program as it is implemented provides feedback which can be used to ensure the pilot program conforms to the intended design, modify strategies that are not working well, reallocate resources if objectives are not being met, and account for time and costs. To conduct this stage of the evaluation effectively for a program that is intended to run longer than 1 year, the monitoring must be continuous, and evaluations must be reported periodically to allow necessary changes to be made in the program.

During the design of the pilot program, an implementation plan was developed (NYSDEC 1990:10-24). This planning document outlined 11 major implementation stages and a time line for completing those stages (see Table 1). By early 1992, implementation staff in Region 3 had made efforts to complete parts or all of stages 1-8. A preliminary evaluation of those efforts identified several early successes as well as some areas that needed to be enhanced to increase the opportunity for the pilot program to be successful (Enck and Decker 1992). This report is a follow-up continuing our evaluation of how implementation is proceeding as outlined in the planning document (NYSDEC 1990).

HOW IS IMPLEMENTATION PROCEEDING?

Recruitment and Selection of Master Hunter Volunteers

Recruitment and selection of master hunter volunteers are major elements of the implementation phase of the pilot program. Master hunters are intended to provide mentoring through 1-on-1 contact with youth apprentices during a year-long pilot program. In essence, these volunteers provide the "treatments" of apprenticeship and social support for youth apprentices.

Table 1. Major stages to be completed during the implementation of the pilot Apprentice Hunter Program to provide social support and apprenticeship experiences for youth who have an interest in hunting, but who are likely to participate only marginally without programmatic intervention (from NYSDEC 1990:10-24).

Stages of implementation

1. Obtain final DEC support for the pilot program
 2. Obtain NYSCC support for the pilot program
 3. Obtain support of sportsmen's education course instructors
 - 4.† Recruitment and selection of master hunters
 - 5.† Screening and selection of potential youth apprentices
 - 6.† Training workshops for master hunters
 - 7.† Notification of youth apprentices
 - 8.† Get-acquainted meetings between master hunters and youth apprentices
 - 9.† Communication between master hunters and program sponsors
 - 10.† Subsequent contacts between master hunters and youth apprentices
 11. Termination of the mentoring process
-

†These stages of implementation are the foci for this report.

Suggestions for recruitment and selection of master hunters were offered in the planning document (NYSDEC 1990:12-13), and initial efforts at recruiting master hunters in Region 3 were evaluated in Enck and Brown (1992). Table 2 describes the general plan for recruiting and selecting master hunters, efforts made by implementation staff including any alterations to the plan, and an assessment of the effectiveness of those actions. A discussion of these efforts is provided below.

Initial efforts to recruit master hunters in Region 3 beginning in 1990 involved 2 main techniques by DEC staff: (1) asking SEC instructors to identify potential master hunters, and (2) making presentations to County Sportsmen's Federation meetings. However, these efforts largely were unsuccessful. The evaluation strategy allowed us to identify several barriers to participation by potential master hunters, and provided opportunities for mid-course changes to be made to overcome the barriers (Enck and Brown 1992). Some information is repeated here for comparison with Region 8.

In Region 3 discussions with trained master hunters, as well as some people who decided not to volunteer as master hunters, indicated that barriers to participation included (1) liability issues, (2) being too busy to take on an apprentice, and (3) expected costs to be incurred by master hunters. In addition, some communication problems existed. Implementation staff initially made presentations at County Sportsmen's Federation meetings in late winter, which was about 8 months before master hunters and apprentices were expected to be paired. Through these meetings, staff also relied on these County representatives to relay information about the program to local clubs. Some representatives did relay this information, others did not, and some were better than others at relaying necessary information (Enck and Brown 1992).

Table 2. Recruitment and selection of master hunters: a summary of planned actions, initial actions implemented, changes made due to the evaluation, and most effective actions.

<u>Planned actions*</u>	<u>Initial actions implemented</u>	<u>Changes made due to evaluation^b</u>	<u>Most effective actions</u>
<ul style="list-style-type: none"> ● Recruitment efforts will concentrate on reaching experienced hunters who have an interest in youth, and available time. 	<ul style="list-style-type: none"> ● Initial recruitment efforts concentrated on organized sportsmen's groups because they were assumed to have experienced members. 		
<ul style="list-style-type: none"> ● Recruitment efforts will entail a variety of methods. 	<ul style="list-style-type: none"> ● Initial recruitment efforts involved asking sportsmen's education instructors to identify potential master hunters, and presentations at county sportsmen's federation meetings. 	<ul style="list-style-type: none"> ● Impediments to participation as master hunters were identified and efforts were made to address impediments. In addition, a wider variety of strategies was used to reach potential master hunters because many qualified individuals were not members of organized sportsmen's groups and county representatives did not always report information back to their clubs. 	<ul style="list-style-type: none"> ● Multiple methods which reach a wide audience of potential master hunters and which take advantage of personal contacts.
<ul style="list-style-type: none"> ● New York State Conservation Council (NYSCC) should guide methodology, and should have a major role through contacts with sportsmen's organizations. 	<ul style="list-style-type: none"> ● A 3-person committee of NYSCC was appointed to assist in implementation. 	<ul style="list-style-type: none"> ● All 3 members of the committee resigned before implementation began. DEC staff then worked directly with potential master hunters. In 1993 DEC staff also coordinated a fish and wildlife Coalition for Youth to organize support for the program. 	<ul style="list-style-type: none"> ● Direct recruitment of potential master hunters instead of reliance on third parties who are not well-informed about the program. Coalitions hold much promise, but need to be evaluated.

Table 2. Continued.

Planned actions ^a	Initial actions implemented	Changes made due to evaluation ^b	Most effective actions
<ul style="list-style-type: none"> DEC implementation staff will have an active role in recruitment by making out presentations, sending out mail solicitations, and contacting sportsmen's education instructors. 	<ul style="list-style-type: none"> The Region 3 sportsmen's education coordinator had to assume implementation duties because a hiring freeze precluded hiring another staff member to run the program. 	<ul style="list-style-type: none"> Additional efforts were made to hire staff under a temporary title to relieve permanent staff who had been given the extra responsibility of implementing the program. 	<ul style="list-style-type: none"> Use of job-specific hiring criteria ensured the right individual was hired for the job.
<ul style="list-style-type: none"> Three months after an implementation staff member was hired, he left for another job. 	<ul style="list-style-type: none"> A new staff member was hired in Region 3 after development of a more extensive job description and hiring criteria. 	<ul style="list-style-type: none"> Use of job-specific hiring criteria ensured the right individual was hired for the job. 	<ul style="list-style-type: none"> (1) personal contacts; (2) mass mailings to groups such as turkey hunters; and (3) articles in specific organizations' newsletters. Coalitions for youth hold promise for reaching other "unaffiliated" master hunter candidates.
<ul style="list-style-type: none"> The new staff member in Region 3 and the staff member recently hired in Region 8 have been involved in a wide range of activities. See text for detail. 	<ul style="list-style-type: none"> The Regional sportsmen's education coordinator handled inquiries until an implementation staff member was hired. 	<ul style="list-style-type: none"> Implementation staff handled inquiries because they were most familiar with the program. 	<ul style="list-style-type: none"> Implementation staff were most likely best suited to handle inquiries.
<ul style="list-style-type: none"> Support staff in Region 3 will be trained to answer telephone inquiries about the program. 	<ul style="list-style-type: none"> The Regional sportsmen's education coordinator handled inquiries until an implementation staff member was hired. 	<ul style="list-style-type: none"> Implementation staff handled inquiries because they were most familiar with the program. 	<ul style="list-style-type: none"> Implementation staff were most likely best suited to handle inquiries.

Table 2. Continued.

^aPlanned actions were described in NYSDEC 1990.

^bThe evaluation is very broad in scope and includes efforts by implementation staff to optimize implementation efforts without direct input by evaluation staff.

Several actions were taken to overcome identified barriers to participation. Liability protection was obtained by making all trained master hunters in both Regions DEC volunteers, essentially giving them employee liability status. Timing of communication between program implementation staff and potential master hunters was improved by shortening the time between recruitment and training. Implementation staff also began to communicate directly with potential master hunters instead of solely relying on third parties to deliver important information.

In Region 8, potential master hunters were concerned about (1) "not getting along with" the apprentice with whom DEC matched them, (2) the apprentice living "too far away," and (3) being too busy themselves. Concerns related to the pairing of master hunters and apprentices were overcome to a great extent by altering the pairing process to provide more input by the master hunter, the apprentice, and the apprentice's family (see Pairing of Master Hunters and Apprentices on page 29). The "too far away" problem persists with some potential for relief through targeted recruitment of master hunters by volunteer county coordinators and networking within Coalitions for Youth being developed in each Region².

Multiple methods of recruiting master hunters have been instituted to overcome barriers to participation by potential master hunters in both Regions: (1) presentations at local sportsmen's clubs and county sportsmen's

²Implementation staff in both Regions currently are bringing together coalitions of organizations to support programs aimed at youth. In Region 3 the Coalition involves about 2 dozen broadly conservation-oriented organizations as well as organizations devoted solely to hunting. A slightly different outcome is occurring in Region 8 where the Coalition initially has attracted about a dozen, more-traditional hunting organizations. Evaluative information about these "Coalitions for Youth" will be presented in a subsequent report.

federation meetings; (2) news releases; (3) posters at County fairs, National Hunting and Fishing Day, Empire Farm Days, 4-H events, and sportsmen's shows; (4) a radio public service announcement; (5) a presentation at the state Outdoor Writer's Association meeting; (6) an article in DEC's magazine *The Conservationist*; (7) personal contacts; (8) mass mailings to turkey-hunting-permit holders, members of local chapters of the National Wild Turkey Federation and the Ruffed Grouse Society, and members of New York Bowmen; and (9) development of Coalitions for Youth.

Interviews with 17 master hunters who were paired with apprentices in Region 3 indicated that newspaper and magazine articles resulting from news releases ($n = 5$), presentations at federation meetings ($n = 4$), mass mailings to hunters or articles in specific organizations' newsletters ($n = 3$), and personal contacts ($n = 3$) were successful methods of recruiting master hunters. Interviews with 23 paired master hunters in Region 8 revealed that mass mailings to hunters or articles in specific organizations' newsletters ($n = 12$), personal contacts ($n = 5$), and communicating through sportsmen's education instructors ($n = 2$) were successful. Thus, use of multiple methods which reach a wide audience of potential master hunters and which take advantage of personal contacts and mass mailings to hunters or articles in specific organizations' newsletters seem to be useful methods for recruiting master hunters into the program³. The Coalitions for Youth were not well-developed at the time master hunters were contacted for this part of the evaluation, but the Coalitions hold much promise for identifying both potential master hunters and apprentices.

³Efficiency of the different techniques cannot be determined because there is no way of knowing how many potential master hunters were contacted via each method.

Screening and Selection of Apprentices

Procedures for screening and selecting apprentices were described in the planning document (NYSDEC 1990:16-17). Table 3 describes the general plan for accomplishing this task, and actions which were taken. Specific details are provided below.

Several important changes occurred from 1990 to present in the distribution of screening instruments to students at SEC's. In 1990, screening instruments were developed by evaluation staff and hand-delivered to an incomplete set of volunteer SEC instructors by implementation staff in Region 3, which was the only Region implementing the pilot program at that time. However, participation by instructors was very low because instructors had not been contacted beforehand to gain their assistance.

In 1991, the statewide sportsmen's education coordinator wrote to all SEC instructors in Region 3 asking for their assistance. This action resulted in increased (but not complete) cooperation from instructors when instruments were hand-delivered in 1991. Also, in 1991 screening instruments were mailed in late August to an incomplete set of SEC instructors in Region 8. Only about one-half of SEC instructors were reached in Region 8 because almost one-half of the SEC's in the Region had been completed before the decision was made to expand the pilot program to that Region.

In 1992, implementation staff in both Regions hand-delivered screening instruments to a majority of SEC instructors, many of whom were by then familiar with the program. However, cooperation by SEC instructors still was quite low. In June 1993, about 10,000 screening instruments and postage-paid return envelopes were mailed to all SEC instructors in both Regions. The

Table 3. Screening and selection of apprentices: a summary of planned actions, initial actions implemented, changes made due to the evaluation, and most effective actions.

Planned actions ^a	Initial actions implemented	Changes made due to evaluation ^b	Most effective actions
<ul style="list-style-type: none"> ● Implementation staff will deliver screening instruments to instructors of sportsmen's education courses. The instructors will administer the instruments. Implementation staff will retrieve completed instruments from the instructors. 	<ul style="list-style-type: none"> ● Screening instruments were hand-delivered to some instructors and mailed to others. Completed instruments were retrieved via hand or mail. 	<ul style="list-style-type: none"> ● Starting in 1991, letters were sent to instructors to make them more aware of the program and to gain their support. In 1993 efforts also were made to incorporate the screening instrument into the exam given at sportsmen's education (gun) courses, but it would take at least 3 years before all instructors would have the new materials. The idea was tabled until a programmatic decision is made. ● In 1993 implementation staff mailed 10,000 screening instruments directly to instructors in the 2 Regions. 	<ul style="list-style-type: none"> ● Direct mailing of screening instruments to all SEC instructors, accompanied by postage-paid return envelopes.
<ul style="list-style-type: none"> ● Implementation staff will forward completed instruments to staff at Cornell's Human Dimensions Research Unit who will analyze them. 	<ul style="list-style-type: none"> ● As implementation staff received completed instruments, they forwarded the instruments to Cornell. 	<ul style="list-style-type: none"> ● Some instructors were given postage-paid return envelopes to mail completed instruments directly to Cornell to determine whether the screening process could be expedited. 	

Table 3. Continued.

Planned actions ^a	Initial actions implemented	Changes made due to evaluation ^b	Most effective actions
<ul style="list-style-type: none"> ● Analysis of instruments will be completed in 4 groups: after 1/4, 1/2, 3/4, and all screening instruments are collected. This will facilitate training and pairing of master hunters with apprentices in manageable groups. 	<ul style="list-style-type: none"> ● We expected to get 3,000 screening instruments returned per Region based on the number of people attending the sportsmen's education courses. One-quarter of 3,000 = 750. However, this preliminary target was never reached. 	<ul style="list-style-type: none"> ● Beginning in 1991, Cornell staff analyzed the instruments as they were received (instead of waiting for target numbers to be reached. In 1992, implementation staff manually analyzed the screening instruments to expedite contacting potential apprentices. 	<ul style="list-style-type: none"> ● Although manual analysis of screening instruments by implementation staff speeded up the process of identifying potential apprentices, that method was not effective because of the complexity of analyzing stage-of-hunting adoption, and the likelihood that qualified apprentices are not invited to the program. Computer analysis by Cornell staff was most effective.

^aPlanned actions were described in NYSDEC 1990.

^bThe evaluation is very broad in scope and includes efforts by implementation staff to optimize implementation efforts without direct input by evaluation staff.

number of instruments mailed to each instructor was based on the number of classes he/she was expected to teach and an average of 30 students per class⁴.

During 1990-92, 790 screening instruments were completed by youth at SEC's in Region 3. In Region 8, 469 youth completed screening instruments during 1991-92. From June through November 1993, 626 and 1,686 screening instruments were completed in Regions 3 and 8, respectively.

Based on estimates by Pomerantz and Decker (1986), evaluation staff had expected to identify several hundred candidates per Region per year via screening instruments. However, several problems led to a smaller number of identified apprentices than expected. First, the process of distributing screening instruments was not very effective. Hand-delivery of screening instruments to SEC instructors did not ensure that all students were screened in a given year because many instructors do not communicate with DEC staff prior to teaching their course(s)⁵. In addition, some instructors who were given screening instruments did not administer them.

Second, fewer persons than expected attended SEC's in the 2 Regions. The decision to use screening instruments at SEC's was based on information from studies of persons who took SEC's in 1978 (Brown et al. 1981) and 1983 (Purdy and Decker 1986). In those years, about 50,000 persons annually

⁴Plans to administer the screening instrument as part of the SEC exam have been discontinued at this time. Instructors obtain course materials as they need supplies, and the lag time until all instructors would have the new exam/screening instrument was much too long to be included in this pilot program.

⁵SEC instructors are volunteers, not DEC employees. Each instructor decides whether to offer a course in a given year, and each instructor contacts Regional DEC staff for materials and other support when it is needed. Instructors also provide course rosters to DEC staff *post facto*. Due to these logistics, implementation staff could not ensure that all SEC instructors received screening instruments before the instructors offered a course.

attended SEC's statewide. Among those persons were a relatively large number of potential apprentices (i.e., youth who were interested in hunting, but who did not have apprenticeship experience and/or social support for hunting). However, by the time the Apprentice Hunter Program was implemented in the early 1990's, only about 2,700 persons were attending SEC's annually (New York State Dep. Environ. Conserv., unpubl. data).⁶

In addition, 2 major problems occurred with respect to screening of SEC graduates and invitation of qualified apprentices to participate in the pilot. First, evaluation staff applied only partial selection criteria when analyzing screening instruments, and did not modify screening instruments to assess SEC graduates' stage of hunting adoption until 1993. These problems arose when evaluation staff developed new methodology for determining whether SEC graduates had apprenticeship and/or social support based on revisions of the methodology developed in the "1978 Hunter Training Course Participant Study" (Brown et al. 1981) and the "Panel Study of 1983 SEC Graduates" (Purdy and Decker 1986). As a result, only about one-third of potentially qualified apprentices were identified during 1990-92. Second, implementation staff were confused about whether to invite all youth who were identified as potential apprentices, or whether they should invite only those youth who lacked family members with which to hunt. These 2 problems resulted in only a small pool of potential apprentices being invited to participate during 1990-92.

In Region 3, 164 youth were identified as potential apprentices during 1990-92. Names, addresses, and telephone numbers of these youth were

⁶In the early 1980's, about 5,000-7,000 persons attended SEC's annually in Region 3 and about 5,800-7,000 attended SEC's annually in Region 8. In 1990, the numbers of persons who attended SEC's in Regions 3 and 8 were about 2,800 and 3,700, respectively.

forwarded to implementation staff. Fifty-nine out of the 164 told implementation staff that they already had someone with which to hunt, and these 59 subsequently were not invited to participate although they still were qualified for the program. Of the remaining 105, only 19 (18%) agreed to participate. Qualitative assessments by implementation staff indicated that most of the youth who declined to participate had other higher priorities for their time, or their parents did not approve of their participation in the program.

In Region 8 in 1991-92, 139 youth were identified as potential apprentices, and their names, addresses, and phone numbers were sent to implementation staff. However, because the pilot was just getting started in Region 8, a decision was made to work only at first in Monroe County, NY (i.e., Rochester area). Thus, the pool of apprentice candidates was only 39 during 1991-92 in Region 8. Seventeen of the 39 told implementation staff they already had someone with whom to hunt. These 17 were not invited to participate although they still were qualified for the program. Of the remaining 22, only 6 (27%) agreed to participate. Qualitative assessments by implementation staff indicated that many of those who declined to participate had other higher priorities for their time.

To augment the small number of potential apprentices identified via screening instruments, auxiliary methods were developed to screen youth who (1) attended an SEC but who did not have the opportunity to complete a screening instrument at the course, and (2) were potential apprentices but did not have an opportunity to attend a SEC. Beginning in fall 1992, implementation staff obtained SEC course rosters for their respective Regions. All names, addresses, and telephone numbers of youths ≤ 17 years of age were

selected from the lists and checked against the lists of SEC attendees who completed a written screening instrument to eliminate duplication.

Implementation staff then administered a telephone screening instrument to those youth for whom telephone numbers were available. Youth for whom no telephone number was available were sent a letter describing the program and its intended audience and asking if he/she was interested in the program. The cost and labor-intensive nature of this telephone/mailling method will make it unfeasible in an operational program conducted by DEC.

In addition to this auxiliary telephone and mail screening of individuals who attended SEC's, implementation staff used a variety of other methods to identify youth who were interested in hunting, but who had never attended an SEC. These methods included: (1) news releases about the program, (2) a radio PSA, (3) a presentation to the state meeting of the Outdoor Writer's Association, (4) letters to youth organizations identified through the United Way, (5) letters to master hunters encouraging them to identify potential apprentices in their local areas, (6) contacts with NRA gun safety instructors, (7) posters at County fairs, (8) posters in local high schools, (9) an article in DEC's *The Conservationist* magazine, and (10) contacts with The Boy Scouts of America--Explorer division.

Interviews with 18 apprentices who were paired with master hunters in Region 3 indicated that screening SEC attendees (n = 6), and personal contacts (n = 9) were successful methods of identifying apprentices⁷. Interviews with 26 paired apprentices in Region 8 revealed that screening SEC attendees (n = 10), personal contacts (n = 10), and newspaper and magazine articles that

⁷Efficiency of the different techniques cannot be determined because there is no way of knowing how many potential apprentices were contacted via each method.

resulted from news releases ($n = 4$) were successful. Youth who saw posters, newspaper articles, or other information about the program had to make a self-assessment about their qualification for the program, and they had to have enough interest to contact implementation staff for more information. This put unreasonable responsibility on very young persons who, by definition, have unsupported interest in hunting.

Many potential apprentices who had not yet attended an SEC were identified by another person (e.g., family member, friend, or neighbor) who then contacted implementation staff about the youth. This method did not require self-selection nor extra effort on the part of the youth to contact DEC because implementation staff simply contacted the potential apprentices after they had been identified by another person.

Screening of SEC attendees will continue to be an important method of identifying potential apprentices, and personal contacts by a broad network of persons seems to be the most effective auxiliary method. Most other auxiliary methods are not effective because they require (1) self-selection by the potential apprentice, and (2) extra effort on the part of the potential apprentice to contact DEC about the program.

Because of the difficulties involved in identifying potential apprentices who have not yet taken an SEC, the program would benefit from additional effort being expended to make adults, who are in the best position to identify potential apprentices, aware of the program (Jacobs and Nash 1993). Implementation staff in both Regions currently are working towards this end through the Coalitions for Youth.

Training Workshops for Master Hunters

Master hunter volunteers were expected to bring to the program different levels of skills and abilities. In addition, the experimental nature of the pilot program required that all master hunters receive training to ensure that they fully understood the concepts of apprenticeship and social support within the context of the pilot program. Without such training, the risk would be high of having apprentices receive a less than adequate or consistent exposure to either apprenticeship or social support.

Planned procedures for training master hunters were described in the planning document (NYSDEC 1990:15-16). Table 4 describes the general plan for training master hunters, efforts made by implementation staff including any purposeful or unpurposeful actions to alter the plan, and an assessment of the effectiveness of those actions. Details are discussed below.

Master hunters received training at a 2.5 hr session that covered background about the program, its purpose, safety and liability considerations, information on mentoring, and discussions about apprenticeship and social support. A variety of support materials were provided each master hunter including a Master Hunter Training Manual, New York State Mentoring Manual, information on places to hunt, and information about rabies and Lyme disease. At the end of the training workshop, master hunters were provided an opportunity to comment about the training. In addition, approximately one-half of trained master hunters in both Regions were contacted via telephone and asked to evaluate the training they received.

Although post-workshop comments indicated that master hunters generally believed the training was helpful and worthwhile (Jacobs and Nash 1992), the telephone evaluation revealed that a few modifications to the training

Table 4. Training workshops for master hunters: summary of planned actions, initial actions implemented, changes made due to the evaluation, and most effective actions.

<u>Planned actions^a</u>	<u>Initial actions implemented</u>	<u>Changes made due to evaluation^b</u>	<u>Most effective actions</u>
<ul style="list-style-type: none"> • Training workshops should be run by DEC implementation staff because of their familiarity with the program. 	<ul style="list-style-type: none"> • Implementation staff ran the workshops initially. Volunteers assisted with or ran workshops later. 		<ul style="list-style-type: none"> • Workshops run by implementation staff are most effective because staff are most knowledgeable about the program and less likely than volunteers to change the emphasis and purpose of the program.
<ul style="list-style-type: none"> • Master hunters should be provided information about: <ul style="list-style-type: none"> • why the pilot program is necessary • how the volunteers can be most helpful to the pilot program • how to operationalize the pilot program 	<ul style="list-style-type: none"> • Master hunters were provided a summary of why the pilot program is necessary, and what it is intended to accomplish. 	<ul style="list-style-type: none"> • Additional information was provided about the purpose of the program and how to operationalize the concepts of apprenticeship and social support. 	<ul style="list-style-type: none"> • Additional training is needed, especially with 1-on-1 pairing.
<ul style="list-style-type: none"> • Information should be provided to the master hunters about what is required to operationalize the experimental concepts of "apprenticeship" and "social support." 	<ul style="list-style-type: none"> • A handout describing social support was included in a packet for the master hunters. 	<ul style="list-style-type: none"> • The evaluation recommended that more "hands-on" training be provided, including role playing, although only limited changes were made due to time constraints. 	<ul style="list-style-type: none"> • This will be evaluated further in the future.

Table 4. Continued.

Planned actions ^a	Initial actions implemented	Changes made due to evaluation ^b	Most effective actions
<ul style="list-style-type: none"> ● Information on mentoring should be taught by an expert on the subject. 	<ul style="list-style-type: none"> ● Written information about mentoring was provided to master hunters. 	<ul style="list-style-type: none"> ● A New York State mentoring manual prepared by the New York State Mentoring Advisory Committee was included in the master hunters' packet. 	<ul style="list-style-type: none"> ● Master hunters still do not seem to understand their role very well.
<ul style="list-style-type: none"> ● Master hunters were to be asked to detail the facilities and other hunters on which they could rely for help in carrying out their responsibilities. 	<ul style="list-style-type: none"> ● Master hunters were asked to write down the facilities and other hunters on which they could rely for assistance. 		
<ul style="list-style-type: none"> ● Information about the types of support the New York State Conservation Council (NYSCC) could provide was to be given to master hunters. 	<ul style="list-style-type: none"> ● The 3 person NYSCC committee dissolved. 	<ul style="list-style-type: none"> ● Implementation staff obtained information on facilities and other support available for master hunters, and this information was provided to master hunters through a newsletter. Master hunters desired frequent communication, in addition to the newsletter, regarding availability of facilities and upcoming events. 	<ul style="list-style-type: none"> ● Implementation staff collected and distributed information about the availability of facilities.
<ul style="list-style-type: none"> ● Information about the evaluation of the pilot program was to be given to the master hunters, including their role in the evaluation. 	<ul style="list-style-type: none"> ● Master hunters were told that the Human Dimensions Research Unit at Cornell University was evaluating the program. 		

Table 4. Continued.

*Planned actions were described in NYSDEC 1990.

†The evaluation is very broad in scope and includes efforts by implementation staff to optimize implementation efforts without direct input by evaluation staff.

sessions would enhance the likelihood that master hunters could successfully implement the program. One needed modification is to allow for more discussion at the training workshops about the purpose of the program. Many of the master hunters believed the program was aimed at bolstering the population of hunters so more political support could be gained for hunting, rather than having the purpose of helping youth who had an interest in learning more about hunting, but who had no way to act on that interest. Master hunters may have found it easier to believe that the goal was to enhance support for hunting because that was something they believed they should and could do.

Interviews with master hunters led to the conclusion that many mentors do not have the skills or experience necessary to provide apprenticeship and social support, even though all master hunters have at least 7 years of hunting experience. For this reason, success of the program could be enhanced by providing additional training about how master hunters can offer apprenticeship and social support to the youth. The most effective training likely would be experiential in nature, and may involve group discussion techniques or role playing during which master hunters' understanding of apprenticeship and social support are confirmed or refuted. All aspects of the training should be made more extensive and intensive, and the workshops should be increased in length from 2.5 hours to 2 days (e.g., a weekend). This would allow master hunters to take advantage of opportunities to learn what they are to do, act it out via role playing, have their actions critiqued by staff and other master hunters, and acquire new skills and techniques to help apprentices' build on their interest in hunting.

Notification of Youth Apprentices

Another primary implementation step was for staff to contact youth identified as potential apprentices and invite them to participate in the program. Planned notification activities were described in the planning document (NYSDEC 1990:18-19). Table 5 describes the general plan and mid-course changes made to enhance notification efforts. Details are discussed below.

Several methods were initially used to contact potential apprentices. Individuals who were identified through SEC screening instruments were contacted via mail by implementation staff and invited to participate. Response was low to the invitation letters. Probable explanations are (1) these persons tended only to be in the interest stage of hunting adoption as opposed to the trial or continuation stages (Purdy et al. 1985), (2) they did not have positive support at home to follow up on their interests, and (3) in many cases they were too young to be expected to follow up on their own. Telephone follow-ups by implementation staff were necessary to ascertain whether these potential apprentices wanted to participate. During the early months of implementation, some potential apprentices were not telephoned for several months after they were mailed an invitation. Quicker follow-ups may have resulted in greater participation during the initial months. As the program progressed, more timely telephone follow-ups were made.

Telephone interviews of SEC graduates (those who did not complete a screening instrument at the SEC) also were used to identify potential apprentices. At the end of the telephone interview, potential apprentices were invited to participate, and youth who did not qualify were thanked for their time. Although this technique allowed potential apprentices to be

Table 5. Notification of youth apprentices: planned actions implemented, initial actions implemented, changes made due to the evaluation, and most effective actions.

<u>Planned actions^a</u>	<u>Initial actions implemented</u>	<u>Changes made due to evaluation^b</u>	<u>Most effective actions</u>
<ul style="list-style-type: none"> ● Youths who are screened at sportsmen's education courses and selected for participation will be notified by mail to participate. 	<ul style="list-style-type: none"> ● Letters of invitation were sent to potential apprentices. 	<ul style="list-style-type: none"> ● Telephone follow-ups were made to potential apprentices who did not respond to the mailings. 	<ul style="list-style-type: none"> ● Letters to identified, potential apprentices followed up by telephone calls.
	<ul style="list-style-type: none"> ● Potential apprentices who were screened by telephone (from class rosters) were notified at the end of the telephone interview. 	<ul style="list-style-type: none"> ● Difficulties in identifying potential apprentices and the labor-intensive nature of this method preclude its use in the future. 	<ul style="list-style-type: none"> ● This method is not effective at this time.
	<ul style="list-style-type: none"> ● Most youth graduates of sportsmen's education courses who did not complete a screening questionnaire and for whom no telephone number was available were mailed a letter about the program. 	<ul style="list-style-type: none"> ● Because self-selection and extra effort are required on the part of potential apprentices, this method will not be repeated. 	<ul style="list-style-type: none"> ● This method is not effective.
		<ul style="list-style-type: none"> ● Due to the low number of potential apprentices screened at sportsmen's education courses, the program was widely advertised and potential apprentices were asked to identify themselves and to contact implementation staff. 	<ul style="list-style-type: none"> ● Potential apprentices who did not attend a sportsmen's education course and who were identified by another person (e.g., parent, friend, neighbor) did not experience the potential barriers of self-selection and extra effort needed to contact implementation staff.

Table 5. Continued.

•Planned actions were described in NYSDEC 1990.

•The evaluation is very broad in scope and includes efforts by implementation staff to optimize implementation efforts without direct input by evaluation staff.

notified as soon as they were screened, problems occurred in identifying potential apprentices. Some individuals who had apprenticeship experience were not invited even though they met other selection criteria. In addition, the labor-intensive nature of this technique, and the length of time (up to several months) that elapsed between when the individuals completed an SEC and when they were screened via telephone preclude use of telephone screening as a way of contacting potential apprentices in the future.

SEC graduates who did not complete a screening instrument at an SEC or provide a telephone number on the course roster were sent a brochure and letter about the program. These individuals were asked to self-assess their qualifications for the program, and to telephone implementation staff if they were interested in participating. The need for self-assessment and the lack of telephone follow-ups limited the usefulness of this technique.

Youth who were screened after they contacted DEC about their interest (i.e., found out about the program through posters, newspaper articles, or other persons) also had to self-assess their qualifications for the program. They also had to have enough interest to contact DEC for more information. As discussed above, this is not as effective as directly inviting individuals who are known via screening instruments to qualify for the program.

Given the many barriers to potential apprentices' participation in the program, staff efforts could be most effective if they are aimed at making the initial contact and invitation to participate as easy on the youth as possible--no matter how the potential apprentices are identified. This need precludes self-selection by potential apprentices and the requirement that the youth initially contact implementation staff. The most effective methods of

notifying potential apprentices were telephone contacts or mailings followed closely by telephone follow-ups from implementation staff to the youth.

Pairing of Master Hunters and Apprentices

The last step that had to be accomplished before initiation of the year-long program was the pairing of master hunters with apprentices. The planned procedure for pairing master hunters and apprentices was described in the planning document (NYSDEC 1990:20-23). Table 6 describes the general plan and mid-course changes made to the procedure for pairing master hunters and apprentices. Discussion is provided below.

Initially in Region 3, implementation staff held 2 "get-acquainted" meetings which were attended by 3-5 apprentices, the apprentices' parents, and 3-5 master hunters. All participants were provided verbal and written information about the program including its purpose and a general description of how the program was to be conducted. In later meetings, more information was provided about the parents' responsibilities (e.g., parental accompaniment of 12-13 year-old apprentices while hunting) and liability issues because those issues were the topics of many questions at early pairing meetings.

After the program was summarized and initial questions answered, apprentice/master hunter pairs were publicly announced as a way of officially starting the program. Then the parents assembled in an adjacent room where they were shown a movie on hunting ethics and given the opportunity to discuss hunting in general and the program specifically. During this time (about 1 hour), apprentices and master hunters met to get acquainted, discuss the log books they were required to maintain, and plan their first activity together. At the end of the meeting, parents met with their children and respective master hunters to discuss their future plans.

Table 6. Pairing of master hunters and apprentices: summary of planned actions, initial actions implemented, changes made due to the evaluation, and most effective actions.

<u>Planned actions^a</u>	<u>Initial actions implemented</u>	<u>Changes made due to evaluation^b</u>	<u>Most effective actions</u>
<ul style="list-style-type: none"> Apprentices, parents, and master hunters will be given a 30-minute summary of the program and a chance to have their questions answered. Each pair will be announced to the audience. Parents will be involved in several activities relating to hunting while the apprentices and master hunters meet. The pairs will meet for about 1 hour to become acquainted and to begin planning in their log books. 	<ul style="list-style-type: none"> Apprentices, parents, and master hunters were given a 30-minute summary of the program and a chance to have their questions answered. Each pair was announced to the audience. Parents were shown a movie on hunting ethics, and were provided an extended period to ask questions about the program while the pairs met. The pairs met for about 1 hour to become acquainted and to begin planning in their log books. 	<ul style="list-style-type: none"> Additional information about the purpose of the program and about the parents' responsibilities was incorporated into the summary of the program. 	<ul style="list-style-type: none"> For those persons who could attend pairing meetings, the organized atmosphere of the meetings helped participants feel like the program was officially started.
		<ul style="list-style-type: none"> Difficulty in getting multiple pairs ready to be matched at the same time, long distances some persons had to travel to attend pairing meetings, and a desire on the part of all participants to have more input in the pairing process led to 1-on-1 pairing facilitated by implementation staff. 	<ul style="list-style-type: none"> 1-on-1 pairing overcame concerns on the part of participants that they would be paired with someone with whom they were not comfortable. However, oversight by implementation staff was necessary to ensure that program goals, actions, etc. were addressed, and that parents' questions were answered satisfactorily.

Table 6. Continued.

*Planned actions were described in NYSDEC 1990.

†The evaluation is very broad in scope and includes efforts by implementation staff to optimize implementation efforts without direct input by evaluation staff.

The "get-acquainted" meetings worked well for some individuals. The meeting format seemed to provide opportunities for everyone's questions to be answered, and individuals could follow-up on questions asked by others. Having organized meetings gave a sense of importance to the pairing process, and provided an official start to the participants' year-long experience. Meetings provided an opportunity for master hunters to share ideas, and for apprentices to meet other youth with a similar interest. Finally, meetings allowed apprentices, their parents, and associated master hunters to talk to each other in-person in a standardized format.

However, these "get-acquainted" meetings were not without some problems. It was difficult to identify a large pool of apprentices at any 1 time, and invite multiple pairs of apprentices and master hunters to a particular meeting. It also was difficult to find a meeting location convenient to multiple pairs of participants. Consequently, low numbers of pairs were matched at each of these 2 meetings. Further, some parents of apprentices and some master hunters expressed concern that they did not have enough input into the pairing process. Implementation staff used a planned set of criteria to match pairs (e.g., location, similarity of hunting and nonhunting interests). Nonetheless, some participants were uncomfortable about not meeting (and personally "sizing up") their "match" before being officially paired.

To overcome these problems, the pairing process was changed from group pairing meetings to one-on-one pairing. This allowed staff to provide information about the apprentices and master hunters to their respective "matches" and to the apprentices' parents. In this way, the make-up of specific pairs was negotiated using implementation staff as a facilitator. Participants seemed comfortable with the process. After the "match" was

agreed upon, master hunters visited apprentices at their homes, met the apprentices' parents, and introduced the apprentice to the idea of the log book.

This method reduced the "official" nature of the program, and was intended to make the year-long pairing more personal. Unfortunately, evaluation interviews revealed that some mismatches still occurred that were unlikely ever to succeed because the master hunters and/or apprentices and/or parents were too embarrassed to volunteer that anything was wrong. Also, with 1-on-1 matching there is no single activity that signals the "official" start to the program, and parents and apprentices do not get the opportunity to meet other program participants. Personally knowing other participants in the program also contributes to the "official feel" of the program.

The 2 Regions handled these individual matching sessions differently. In Region 3, implementation staff attended many of these individual pairing sessions. This allowed them to answer any questions about the program, and to assess the "fit" of the match. In Region 8, implementation staff generally did not meet directly with participants. In this case, master hunters had to field questions from apprentices and parents, and no one was available to assess independently whether the match "fit." Whether this reduction in the "official" nature of the program has a positive or negative influence on the success of the program will be assessed as the evaluation proceeds. However, some participants have expressed a desire for more "official" signals about the program.

This method placed more responsibility on the master hunters. Questions about the program from apprentices and their parents tended to be directed at the master hunter when they met, and the master hunter had to

introduce the program purpose, how the program would be implemented, the concept of the log books, and the notion of program evaluation to the apprentice. These added responsibilities suggest that master hunter training should be expanded.

Communication Between Master Hunters and Program Sponsors

Communication between the volunteers implementing the program "in the field" and DEC implementation staff was expected to be another key element in the pilot program. Planned communication mechanisms were described in the planning document (NYSDEC 1990:23), and are listed in Table 7 along with any mid-course actions that were necessary to expedite communication. Details are provided below.

Since the summer of 1992, implementation staff have produced and mailed a bi-monthly newsletter to all program participants including apprentices' parents. The newsletter includes information about the program (e.g., news about the Coalitions for Youth, numbers of participants), helpful hints on field preparation and cooking game, reminders about hunting safety, a calendar of up-coming events that master hunters and apprentices may want to attend in either Region, information about wildlife management, and a section dealing with letters to the editor. The newsletter has met the need of master hunters and apprentices for basic information about the program.

Nonetheless, interviews with master hunters and apprentices in Spring 1993 indicated that participants had other unmet communication needs. Many master hunters and apprentices desired more frequent communication with implementation staff. They also would like to have more opportunities to meet with other program participants to discuss their experiences.

Table 7. Communication between master hunters and program sponsors: summary of planned actions, initial actions implemented, changes made due to the evaluation, and most effective actions.

Planned actions*	Initial actions implemented	Changes made due to evaluation ^b	Most effective actions
<ul style="list-style-type: none"> ● A newsletter will be produced by implementation staff highlighting information of interest throughout the program's existence. 	<ul style="list-style-type: none"> ● One of the master hunters volunteered to produce the newsletter, and did produce one issue before dropping out of the program. 	<ul style="list-style-type: none"> ● Implementation staff took over producing the newsletter on a bi-monthly basis. ● Implementation staff also coordinated field days and picnics as communication mechanisms. ● Coalitions for Youth also were established in each Region as additional communication mechanisms. 	<ul style="list-style-type: none"> ● Having implementation staff coordinate and produce the newsletter is most effective because they have the skills and equipment necessary to do so.
<ul style="list-style-type: none"> ● Implementation staff will contact master hunters by telephone or in person at least twice: in the first 3 months, and again before the ninth. 	<ul style="list-style-type: none"> ● Implementation staff have contacted master hunters and apprentices at irregular intervals. 	<ul style="list-style-type: none"> ● Implementation staff have begun establishing county coordinators who will be encouraged to communicate frequently via telephone or in-person visits with program participants. 	
<ul style="list-style-type: none"> ● Master hunters will be encouraged to contact implementation staff. 	<ul style="list-style-type: none"> ● Some master hunters are more likely than others to initiate contacts. 		

Table 7. Continued.

*Planned actions were described in NYSDEC 1990.

†The evaluation is very broad in scope and includes efforts by implementation staff to optimize implementation efforts without direct input by evaluation staff.

Such additional communication could enhance the likelihood that program goals will be met. For example, increased communication could help ensure that adequate apprenticeship and social support were being provided to the youth by reminding master hunters how to operationalize these concepts and stimulate action. More communication would enhance the "official feel" of the program (i.e., make the program feel more like a coordinated effort instead of individuals "doing their own thing"). Much of this increased communication could be accomplished by the county coordinators being established by the implementation staff.

Subsequent Contacts Between Master Hunters and Apprentices

Contacts between master hunters and apprentices that occur during implementation are the "meat" of the Apprentice Hunter Program. The stages of the program are intended to ensure that this step has the greatest opportunity to succeed. Expectations for these contacts were listed in the planning document (NYSDEC 1990:23-24). Table 8 shows the plan for these contacts and how well they have proceeded to date based on information from telephone interviews with master hunters and apprentices (more detailed information from log books maintained by program participants will be available at the end of their year-long pairing). Details are described below.

In Region 3, most master hunters and apprentices likely will not meet the requirement of meeting 15 times during their year-long program. When master hunters and apprentices were interviewed in spring 1993, pairs ($n = 18$) were averaging less than 1 meeting per month (i.e., if they continue at this pace, they will average about 10-11 meetings in 12 months). A few pairs have met only once or twice in 6 months. On the other hand, a few highly motivated

Table 8. Subsequent contacts between master hunters and apprentices: summary of planned actions, initial actions implemented, and changes made due to the evaluation.

Planned actions ^a	Initial actions implemented	Changes made due to evaluation ^b
<ul style="list-style-type: none"> Subsequent contacts will follow the plan developed by the master hunter and apprentice within the program guidelines. 	<ul style="list-style-type: none"> Master hunters and apprentices developed their own individualized plans. 	<ul style="list-style-type: none"> Implementation staff called apprentices and master hunters to encourage them to meet. Coalitions for Youth were established and provided new opportunities of which pairs could take advantage.
<ul style="list-style-type: none"> Master hunters and apprentices must meet at least once a month for a minimum of 15 times during the year they are paired. 	<ul style="list-style-type: none"> Master hunters and apprentices have met about 0.8 times per month. Few pairs are likely to meet the requirements of getting together 15 times. 	<ul style="list-style-type: none"> More frequent communication has been recommended between implementation staff and participants to ensure the required number of visits are experienced.
<ul style="list-style-type: none"> All activities will be recorded in special log books. 		<ul style="list-style-type: none"> Master hunters and apprentices have been requested to return their log books to evaluation staff. However, few have been returned.
<ul style="list-style-type: none"> At least 1 non-hunting activity should occur before the apprentice is taken hunting. 		

Table 8. Continued.

<u>Planned actions^a</u>	<u>Initial actions implemented</u>	<u>Changes made due to evaluation^b</u>
<ul style="list-style-type: none"> ● Apprentices should decide whether they will carry a firearm the first time they go hunting. 		

^aPlanned actions were described in NYSDEC 1990.

^bThe evaluation is very broad in scope and includes efforts by implementation staff to optimize implementation efforts without direct input by evaluation staff.

pairs have met almost twice a month. Appendix A shows the range of activities in which pairs in both Regions have engaged.

Pairs in Region 8 have met at a rate of about 1.3 times per month (i.e., if they continue at this pace they will average about 15 meetings in 12 months). However, the number of times pairs have met is very inconsistent. Some pairs have met 3-4 times per month whereas others have not met in the months since they have been paired.

Reasons for not meeting the requirement of getting together for 15 activities during the year fall into 2 main categories. First, some pairs in both Regions are having trouble finding mutually convenient times to meet. Second, some pairs need encouragement or reminding about their responsibility to meet. Some participants have suggested that group activities sponsored by the program would help them achieve the requirement of getting together for 15 activities during the year. Program-sponsored group activities would provide an opportunity for master hunters and apprentices to share ideas and experiences with other participants. This might help maintain a higher level of interest among participants, and could give participants new ideas to try together. These activities would give a more official "feel" to the program. Also, each group activity attended would count as 1 of the 15 meetings required of the pairs.

We standardized data pertaining to the number of times pairs in both Regions hunted⁸. Pairs in both Regions hunted an average of about once every

⁸Because some pairs were matched in summer and others were matched in fall, not all pairs had the same potential number of months in which to hunt. We assumed small game hunting season went from 1 September to 28 February (i.e., 6 months). We calculated a monthly hunting rate for each pair by dividing the number of times they hunted by the number of months they were paired while the hunting season was open. For example, the hunting rate for those paired in August 1992 = # times hunted/6 months, whereas the hunting

2 months during the hunting season (i.e., hunting rate of about 0.4 times per hunting season month in Region 3 and 0.6 times per hunting season month in Region 8). Appendix B shows the range of types of hunting in which pairs in both Regions have engaged.

Interviews indicated that master hunters and apprentices were excited about the possibility of going hunting together. However, this excitement and intention to hunt did not result in many trips afield. Master hunters and apprentices identified several barriers to their participation in hunts. First, apprentices who are 12-13 years old need to be accompanied by a parent or guardian in the field, and master hunters who are paired with these youth have found it very difficult to involve the apprentices' parents in hunting trips. Several participants suggested that they would be able to hunt more (or at all) if program participants were provided a legal waiver from the requirement that a parent accompany the youth. Second, many youth have limited or no access to hunting equipment (e.g., firearms, proper hunting clothing). Participants have suggested that some parents should take on more responsibility for equipping their son or daughter for the program. However, participants also realized that not all parents would be able to do so financially. To overcome this problem, other participants suggested that loans or donations of hunting equipment should be solicited from manufacturers, or from other hunters.

In addition to assessing whether master hunters and apprentices were meeting the program goals established for participating in hunting-related activities, we also obtained information about the degree to which short-term goals were being met relative to the concepts of apprenticeship and social

rate for those paired in late November 1992 = # times hunted/3 months.

support. We assessed whether these goals were being met by interviewing master hunters and apprentices. Specific results related to these aspects of the subsequent contacts are presented in the section titled "Are short-term goals being met?" on page 43.

Termination of the Mentoring Process

Formal termination of the mentoring process was planned for 2 reasons. First, research has shown that apprentices and mentors learn a great deal from each other, but that a point is reached where the official tie between the 2 should be broken to allow each to grow in an uninhibited manner from what they have experienced. The apprentices should reach a point where they have the skills and knowledge necessary to succeed on their own. Further "mentoring" by a master hunter may actually stifle an apprentice's further growth, and the apprentice could even become resentful toward the mentor. Before that happens, it is important to end the program formally so the former mentor and apprentice can proceed as colleagues. The pair may continue to interact and grow from their experiences together, but they will do so under different conditions than those under which they started their relationship.

Another more practical reason a formal termination was deemed necessary by those who developed the pilot program was that the pilot originally was intended to last only 1 year. Formal termination mechanisms were planned and were reported in the planning document (NYSDEC 1990:24). No summary table is presented because no pairs have been formally terminated. As of July 1993, no pairs have been matched more than 5-6 months in Region 8. However, 10 pairs have been matched longer than 1 year in Region 3 as of July 1993. Plans for terminating matched pairs have not been finalized to date.

ARE SHORT-TERM GOALS BEING MET?

Apprenticeship Experiences

Previous HDRU studies (e.g., Decker et al. 1984, Purdy et al. 1985, Purdy and Decker 1986) found that individuals were more likely to solidify their interest in hunting and become committed hunters if they had experienced particular types of pre-hunting⁹ activities. These activities included: shooting a firearm, seeking information on hunting, eating wild game, accompanying others afield, sharing hunting stories, and seeing game animals killed or cleaned. In the context of the Apprentice Hunter Program, these apprenticeship experiences will not necessarily be pre-hunting in nature. Most apprentices will have passed an SEC, and many will have purchased a hunting license. Some will have been afield hunting. The apprenticeship experiences described above will most often be provided along with the apprentices' hunting activities in the program.

In addition to the provision of hunting-related activities to youth, the concept of apprenticeship also involves the development of a mentoring relationship between each master hunter and his/her apprentice. Mentoring is a supportive 1-on-1 relationship between the adult master hunter and the youth apprentice which facilitates the youth's training and personal growth, especially as they relate to hunting (Anonymous 1991). Master hunters are intended to be a hunting role model, friend, teacher, and coach to the apprentices. As mentors, master hunters also are intended to help their apprentices develop hunting skills and a sense of ethics with respect to hunting.

⁹Pre-hunting means that the individuals accomplished these before they were legally licensed to hunt.

We asked several questions of master hunters and apprentices during our telephone interviews to assess the degree to which apprenticeship experiences were being provided. We asked whether apprentices were developing hunting-related skills, and if so, what kinds of skills they were developing.

Seventy-six percent of pairs in Region 3 (13/17) and 60% of pairs in Region 8 (12/20) believed that apprentices were learning valuable hunting skills¹⁰.

The types of hunting-related skills being developed by apprentices are listed in Appendix C.

Six percent of pairs in Region 3 (1/17) and one-quarter in Region 8 (5/20) reported mixed impressions about whether skill development was occurring. In 5 of these 6 cases, master hunters did not believe skills were being learned whereas the apprentice did. We are uncertain why this discrepancy occurred, and many potential explanations are possible.

Three master hunter/apprentice pairs in each Region agreed the apprentices were not learning or developing any hunting-related skills because the pair had not met very often. These pairs could benefit from additional contact from program implementation staff to ascertain ways to facilitate their meeting.

We also asked about the mentoring relationship between the master hunter and the apprentice. In particular, we wanted to know whether the pair was developing a sense of rapport, friendship, or camaraderie. For 63% of pairs in Region 3 (10/16) and 71% of pairs in Region 8 (15/21), master hunters and apprentices agreed they were developing a closer relationship. Many participants responded that their relationship had gone well beyond the

¹⁰Both master hunter and apprentice in each of these pairs agreed the apprentice was developing hunting skills.

program, and that they "talked about life" and not just hunting. They also indicated that they have become interested in each other's lives, and had developed a sense of trust. Several apprentices said that their master hunters had "become like a father" or a grandfather to them.

Those pairs which had not developed a sense of camaraderie offered several reasons. Some said they had not met enough times to become comfortable with their master hunter or apprentice. Three master hunters believed their apprentices were "too shy or immature."

We also asked whether master hunters believed their apprentices had shown interest in making decisions, and whether apprentices believed they were provided opportunities to make decisions. Results from the 2 Regions differed. In Region 3, 5 of 17 pairs said decisions were being made by the youth, 7 pairs said decisions were not being made by youth, and 5 pairs reported mixed impressions. In Region 8, 11 of 20 pairs believed decisions were being made, 3 said they were not, and 6 reported mixed impressions. Most of the pairs reporting mixed impressions had master hunters saying that the youth had not shown an interest in making decisions and the youth responding that they had been given opportunities to make decisions and had made decisions.

Those master hunters and apprentices who said the youth were making decisions indicated 2 main types of decision-making opportunities were provided by master hunters. One type consisted of master hunters asking what types of activities the apprentices wanted to do or where they wanted to go (e.g., master hunter provides list of options, or apprentice is asked to develop a list). The second type of decision-making opportunity consisted of the master hunter providing an opportunity for the apprentice to make

decisions dealing with safety and ethical issues (e.g., whether to shoot at an obscured animal, whether to ask permission to hunt on unposted private land, whether to cross a fence with a loaded firearm).

Opportunities in which apprentices are given chances to make decisions dealing with safety and ethical issues are more important than other types of decision-making opportunities that have been provided to date. Opportunities relating to safety and ethical issues allow the youth to mature as hunters. On the other hand, decision-making opportunities relating to what game animals the apprentice wants to hunt, or what type of hunting implement the youth would like to use, pertain more to personal preferences and satisfactions. Although these types of decisions are important, they have a relatively limited impact on helping the youth become knowledgeable, skilled hunters. Apprenticeship experiences are intended to facilitate the apprentices' maturation as hunters. Chances for program success are likely to increase if master hunters are encouraged to provide more of these kinds of opportunities for the youth.

Combining interview questions pertaining to skills development, camaraderie, and decision-making indicated that short-term goals regarding apprenticeship are being met in less than one-half of the pairs. The program will be most likely to succeed if (1) additional emphasis is placed on helping master hunters better understand their responsibilities regarding apprenticeship when they are trained, (2) master hunters receive frequent reminders about these responsibilities as well as helpful information about how they can meet their responsibilities during the time they are paired with a youth, and (3) greater emphasis is placed on helping master hunters to

encourage their apprentices to make important decisions about safety and ethical issues.

Social Support

Previous research (Purdy et al. 1985, Purdy and Decker 1986) has shown that, in addition to apprenticeship experiences, social support for hunting also plays an important role in helping youth develop and build on their interest in hunting. Social support pertains to the relationships between youth who are interested in hunting and the person(s) who influence development of that interest, initiate the youth into hunting, and accompany the youth afield (Purdy et al. 1985, Purdy and Decker 1986). Social support is most influential if the relationship involves persons who are important to the youth (e.g., family members, same age peers), rather than with persons who have weaker social linkages to the youth.

The concept of social support has been difficult for program participants and implementation staff to comprehend and operationalize. Youth generically face risks and opportunities for development of their ideas and interests pertaining to any subject or situation, including hunting (U.S. National Commission 1980). Recognizing that generic problem is essential for developing a practical, working understanding of social support, and a working knowledge of ways to provide it. The types of risks and opportunities that exist and their importance depend to a large degree on the social environment in which the youth lives and therefore relates to hunting.

A useful model for understanding the social environment of youth was developed by Bronfenbrenner (1979) and further discussed by Garbarino (1982). This model is based on the notion that a youth's environment consists of a variety of different settings (e.g., home, school, peer group) in which the

youth directly participates. These settings are connected through social linkages with persons who are important to the youth (e.g., family members, same-age friends).

This model is useful in explaining social support within the context of the Apprentice Hunter Program. Each setting in which a young apprentice participates has potential risks and opportunities for development of the apprentice's hunting interest. For example, many of the apprentices in the program come from home settings which put them at risk relative to hunting. They have few if any family members who hunt or who are supportive of hunting; some family members may even be antihunters. In some cases, apprentices may have been frustrated in previous attempts to develop their hunting interest because few or no family members are supportive of their interests. This kind of frustration commonly leads the youth to a belief that he/she is a failure (U.S. National Commission 1980). Because of this, there may be a stigma of failure attached to an apprentice's participation in the Apprentice Hunter Program if they believe it is a remedial program for persons who need "extra help" becoming a hunter. One of the master hunter's most important tasks is to help his/her apprentice recognize that participation in the program is a sign of strength rather than inadequacy.

Another important task of the master hunter relative to social support is to develop hunting-supportive, social linkages between the youth and others in the various settings in which the youth participates. The first linkage that must be developed is between the apprentice and the master hunter. Interactions between the apprentice and master hunter in a hunting context help to establish a "hunting setting." These interactions help facilitate bonding between the pair so that the master hunter becomes an important person

in the life of the apprentice. Such bonding makes it much easier for the master hunter to facilitate development of social linkages between the apprentice and others between settings in which the apprentice participates, and which will be supportive of hunting.

The number and quality of linkages among individuals within and between settings help determine whether an apprentice's interests can be fully developed (Garbarino 1982:40). Risks to an apprentice's development as a hunter occur in the absence of linkages between persons in the hunting setting and persons in other important settings, or when there is conflict between these settings. "When the [settings] work in concert...the child benefits. When they work in isolation or in opposition, the child is at risk" (Garbarino 1982:40). The master hunter can facilitate development of linkages between persons in the various settings by involving the apprentice's family members or close friends in program activities. As those individuals become more supportive of the apprentice's hunting interests, the hunting-related linkages between the apprentice and others in his/her home setting, school setting, Boy Scout setting, etc. become stronger and more positive.

Another important aspect of social support is that it should be adaptive to the changing needs of the apprentice (U.S. National Commission 1980). The number and types of linkages made between persons in the hunting setting and other important settings (e.g., apprentice's home, school, peer group) will need to change over the course of the program. Not all linkages can or should be developed at once. Some linkages (e.g., involvement of the apprentice's same-age friends) may strengthen on their own after initial assistance from the master hunter.

In telephone interviews with master hunters and apprentices, we asked questions about the development of hunting-related linkages between the apprentices and some of the settings in which the apprentices are a part. Only 17% (3 of 18) of master hunters in Region 3 and 25% (5 of 20) of master hunters in Region 8 involved their apprentices' family members in program activities. A few master hunters in both Regions said they kept their apprentices' parents informed about their activities, but did not involve them directly. Those who did involve apprentices' families did so by inviting family members to accompany the pair to purchase hunting equipment, target shoot (including trap and skeet), attend a fur auction, attend a sportsmen's show, or hunt.

Even fewer master hunters involved their apprentices' established friends in their activities. Only 11% (2 of 19) of master hunters in Region 3 involved their apprentices' friends, and no (0 of 20) master hunters in Region 8 did so. The few friends who were involved went target shooting or trapping with the pairs.

Friends and relatives of the master hunters can be reinforcers of positive support for hunting. However, because those persons are rarely important in the lives of the apprentices, positive hunting-related interactions between them and the apprentices are less helpful than positive hunting-related interactions between the apprentices and the apprentices' family members and friends. Master hunters in both Regions were somewhat more likely to involve their own friends than they were family and friends of their apprentices. Forty-four percent (8 of 18) of master hunters in Region 3 involved their own friends, and 30% (6 of 20) of master hunters in Region 8

did so. Most of the master hunters' friends were involved in sportsmen's club meeting, sharing game meals, target shooting, and hunting.

The interviews indicated strongly that short-term goals pertaining to social support are not being met. Similar to what we found for the concept of apprenticeship, many master hunters are encountering several types of barriers to their efforts to provide social support. For example, involving an apprentice's family members is difficult when the apprentice comes from a single parent home and that parent is too busy to become heavily integrated in the pair's activities. However, in most cases, the most important barrier is that master hunters do not understand the concept very well, and/or they do not understand how to put it into action. Program success may not be possible unless more emphasis is placed on the concept of social support during master hunter training, and unless more programmatic efforts are made to assist master hunters in meeting their responsibilities regarding social support.

WHAT IS THE CURRENT NEED TO CONTINUE THE PILOT PROGRAM?

Demand for the Program by Apprentices

Estimating annual demand for the program certainly is not an exact science. It relies on past trends and future projections of multiple variables. In general terms, we projected annual apprentice demand for the program over the next 12 years (through 2005) by multiplying an estimate of the number of SEC graduates in each age and gender category (e.g., male youth, female youth, male adult, female adult)¹¹ for each of the next 12 years by the

¹¹An estimate of the number of adult candidates is provided in addition to the number of youth candidates because past trends and future projections of all age and gender categories had to be examined to develop the model. The estimates are easily separated into youth and adult categories for those persons who may be interested in either category.

expected proportion of candidates in each category over the same time period. For example, the estimated number of candidates in 1994 (i.e., year 1 of our 12-year model) was calculated as shown in Table 9. A verbal description of this model is given in Appendix D.

To develop this model, past trends and future projections were examined for several variables (e.g., number of SEC graduates, proportion of SEC graduates by age and gender categories, proportion of SEC graduates who would be potential candidates for the program). Future trend data were modified when possible based on expected changes in demographic and social factors in the overall population. Information on these past trends and future projections are shown below.

Trends in Numbers and Characteristics of SEC Graduates.--SEC attendance has been declining generally in New York since the late 1970's with notable exceptions in 2 years¹² (Table 10). Between 1978 and 1990, the number of SEC graduates statewide decreased 47%. Most of this decrease occurred between 1978 and 1986 with the single greatest annual decrease (24%) occurring between 1984 and 1985 when a license fee increase went into effect. The number of SEC graduates remained relatively stable between 1986 and 1990.

Age and gender data are not available from SEC course rosters. The best estimates of these characteristics are from studies of 1978 SEC graduates (Brown et al. 1981) and 1983 SEC graduates (Purdy and Decker 1986). Annual SEC attendance decreased about 12% between 1978 and 1983, so any changes in gender and age characteristics between these years may be indicative of

¹²An increase between 1980 and 1981 corresponded to changes in the administration and use of deer management permits which resulted in an increase in first-time deer hunters. An increase between 1990 and 1991 corresponded to the lowering of the legal hunting age from 14 to 12 which resulted in 12-13 year-olds attending SEC's.

Table 9. Model for calculating the number of potential candidates for the Apprentice Hunter Program in a given year.

Category of SEC grads in a given year	Estimated total number of SEC grads in that year	Estimated percent of SEC grads in that age and gender category	Estimated percent of category who are candidates	Number of candidates in each category
Female youth ^a	N	x	% ₁	= n ₁
Female adults ^b	N	x	% ₂	= n ₂
Male youth	N	x	% ₃	= n ₃
Male adults	N	x	% ₄	= n ₄
Grand total estimated number of candidates in that year = N'				

^aYouth are individuals between 12 and 17 years of age.

^bAdults are individuals 18 years of age and older.

Table 10. Number of individuals graduating from New York State sportsman education (gun) courses from 1978 to 1991, and percent annual change.

<u>Year</u>	<u>Number of Graduates</u>	<u>Percent Change From Previous Year</u>
1978	53,362	---
1979	52,618	-1%
1980	50,626	-4%
1981	58,254	+15%
1982	54,435	-7%
1983	47,106	-13%
1984	42,354	-10%
1985	32,137	-24%
1986	28,584	-10%
1987	29,193	+2%
1988	27,348	-6%
1989	27,086	-1%
1990	28,291	+4%
1991	37,396	+32%

changes that occurred throughout the period of decreasing SEC attendance. Age and gender data from the 1991-92 screening instruments were not used because those data were collected using a convenience sampling framework rather than a random sampling framework, and the age and gender data were known not to be representative.

Important changes occurred in the age and gender profiles of SEC graduates from the late 1970's to the early 1980's (Table 11). From 1978 to 1983, the proportion of youth SEC graduates decreased from 52% to 44%. The proportion of female SEC graduates increased from 15% to 22%. Among females, the proportion of youth decreased from 20% to 18% (i.e., the increase in females was in adults rather than youth). Among males, the proportion of youth decreased from 59% to 53% (i.e., the greatest decrease in SEC graduates was in the male youth category).

Trends in the Proportion of Potential Candidates for the Apprentice Hunter Program.--The proportion of youth ≤ 17 years of age who graduated from SEC's statewide and who would have been candidates for the pilot program decreased from about 80% in 1978 to 18% in 1983. The incomplete data from the 1991-92 screening instruments distributed in the 2 pilot Regions showed that about 42-50% of recent SEC graduates (≤ 17 years of age) in the 2 pilot Regions were candidates for the pilot program. A greater proportion of female youth than male youth were candidates in all years for which data exist (Table 12). Those data also indicated that a relatively large pool of potential, adult candidates has existed in recent years.

The large changes in the proportion of SEC graduates who were candidates for the program show that large changes have occurred since 1978 in the degree to which youth, in particular, are prepared to become hunters. Identical or

Table 11. Number and percentage of graduates from New York State sportsmen education (gun) courses in 1978 and 1983 by gender and age.

<u>Gender and age</u>	<u>1978^a</u>		<u>1983^b</u>	
	<u>estimated N</u>	<u>observed %</u>	<u>estimated N</u>	<u>observed %</u>
Male youth ^c	26,254	49.2	19,031	40.4
Female youth	1,548	2.9	1,601	3.4
Male adults ^d	19,370	36.3	17,712	37.6
Female adults	<u>6,190</u>	<u>11.6</u>	<u>8,762</u>	<u>18.6</u>
	53,362	100.0	47,106	100.0

^aFrom Brown et al. 1981.

^bFrom Purdy and Decker 1986.

^cIndividuals 12-17 years of age.

^dIndividuals ≥ 18 years of age.

Table 12. Proportion of candidates qualified for the Apprentice Hunter Program by ageclass and gender in Regions 3 and 8 in 1978, 1983, 1991, and 1992.

Region 3									
1978					1983				
Age	Male		Female		Age	Male		Female	
	%	n	%	n		%	n	%	n
Youth	78.4	74	100.0	2	Youth	13.9	216	52.2	23
Adults	75.4	69	100.0	24	Adults	24.3	222	44.2	95
Region 3									
1991					1992				
Age	Male		Female		Age	Male		Female	
	%	n	%	n		%	n	%	n
Youth	42.3	601	54.5	33	Youth	43.0	323	82.6	23
Adults	57.0	270	67.1	76	Adults	50.8	128	62.1	29
Region 8									
1978					1983				
Age	Male		Female		Age	Male		Female	
	%	n	%	n		%	n	%	n
Youth	79.0	62	100.0	6	Youth	14.8	169	68.8	16
Adults	71.9	32	92.9	14	Adults	24.1	87	47.0	83
Region 8									
1991					1992				
Age	Male		Female		Age	Male		Female	
	%	n	%	n		%	n	%	n
Youth	38.6	264	50.0	22	Youth	54.8	168	72.7	22
Adults	52.5	99	61.5	39	Adults	61.2	227	73.1	52
Combined Regions									
1978					1983				
Age	Male		Female		Age	Male		Female	
	%	n	%	n		%	n	%	n
Youth	78.7	136	100.0	8	Youth	14.3	385	59.0	39
Adults	74.3	101	97.4	38	Adults	24.3	309	45.5	178
Combined Regions									
1991					1992				
Age	Male		Female		Age	Male		Female	
	%	n	%	n		%	n	%	n
Youth	41.2	865	52.7	55	Youth	47.0	491	77.8	45
Adults	55.8	369	65.2	115	Adults	57.5	355	69.1	81

very similar questions were asked of persons who graduated from SEC's in 1978 (Brown et al. 1981), 1983 (Purdy and Decker 1986), and 1991-92 (screening instruments for the pilot program). These questions pertained to reasons why the persons attended the SEC, whether they had any apprenticeship experience, whether they had social support for hunting, and other related questions which indicated how well they were prepared to become committed hunters. The following conclusions were developed:

- In 1978, SEC grads were a mix of a "rural core" of well-prepared, highly committed, new hunters who attended an SEC to meet legal certification for hunting, and a "suburban/urban fringe" group who were only marginally interested in hunting and who wanted to learn more about it. Those persons in the "rural core" tended to have much apprenticeship experience and social support for hunting whereas the "suburban/urban fringe" did not.
- Between 1978 and 1983, the number of persons attending SEC's annually decreased--a trend which would accelerate during the 1980's. Most of the decrease seems to have resulted from a loss of persons from the marginally interested "suburban/urban fringe." Decreasing attendance by suburban and urban youth at SEC's was occurring even though the normal segment of the overall state population was growing at a faster rate than the rural segment.
- By 1983, most SEC grads represented the "rural core" of well-prepared and highly committed, new hunters. This is why the percentage of youth who were qualified for the program was so low in 1983.
- Between 1983 and 1991, the number of SEC grads declined greatly. Importantly, the decline occurred among rural as well as nonrural groups. During the decade of the 1980's, changes occurred in what had been the "rural core" of hunters. Youth growing up in rural hunting families no longer were getting or taking advantage of apprenticeship experiences, and they were becoming less interested and less prepared to become highly committed hunters. In essence, even the "rural core" of new hunters has been eroding. This explains why the proportion of SEC grads who were qualified for the program increased between 1983 and 1991.

Projected Demographic Changes in the State Population.--I examined historical and projected trends among New York State residents over the period 1980-2005 using data collected by the Census Bureau (U.S. Dep. Commerce 1980,

1990) to assess the relationship between changes in age and gender characteristics of SEC graduates and changes in the general population. I limited the examination of census data to New York residents 12-40 years of age because >90% of all SEC graduates are 12-40 years of age. Of special interest were projected changes in the percentage of residents by age and gender (Table 13).

The proportion of youth in the overall population was projected to decrease slightly through the 1980's and 1990's and then rebound by 2005. The ratio of females:males in the population was expected to remain nearly even (i.e., 50:50 to 52:48) during the period.

From this I inferred that the recent decrease in the proportion of youth graduating from SEC's may have been related to the decrease in the overall population, although the decrease in SEC's was much greater than in the total population. However, the increase in the proportion of females graduating from SEC's did not seem to be related to any change in the proportion of females in the overall population.

Projected Number and Characteristics of SEC Graduates.--Based on SEC enrollment over the last 6 years, the number of SEC graduates can be expected to remain relatively stable at about 25,000 to 27,000 over the next 12 years if no license fee increase occurs. However, the impact of lowering the hunting age from 14 to 12 years of age needs to be examined closely as soon as those data are available. The increase in SEC attendance in 1991 can be attributed completely to 12 and 13 year-olds. That may result in fewer 13 and 14 year-olds attending the SEC in 1992, and possibly into the future.

Table 13. Projected changes in the percentage of persons by ageclass and gender in the New York State population aged 12-40 for the period 1980-2005*.

	Year					
	1980		1985		1990	
Male youth ^b	%	n	%	n	%	n
Female youth	12	912,385	10	769,657	10	715,005
Male adult ^c	12	890,393	10	761,332	9	699,150
Female adult	37	2,693,554	39	2,962,979	40	2,969,169
	39	2,900,776	41	3,079,782	41	3,093,637
	100	7,397,108	100	7,573,750	100	7,476,961
	1995		2000		2005	
Male youth	%	n	%	n	%	n
Female youth	10	695,296	11	741,170	11	740,375
Male adult	9	681,462	10	716,118	11	727,573
Female adult	40	2,878,967	39	2,679,361	38	2,533,389
	41	2,959,745	40	2,773,997	40	2,583,683
	100	7,215,470	100	6,910,646	100	6,585,020

*From U.S. Dep. Commerce 1988.

^bYouth are individuals aged 12-17.

^cAdults are individuals aged 18-40.

Nonetheless, the medium-term trend likely will be a stable number of SEC graduates in the absence of a license fee increase¹³.

If a license fee increase occurs, the number of SEC graduates will decline initially to about 23,000 (based on the decrease in the number of persons attending SEC's related to the license fee increase of 1984), and then will stabilize at about 22,000. Although license sales tend to rebound after a license fee increase, the number of SEC graduates does not rebound similarly, possibly because potential hunters with marginal interest (i.e., those who do not have apprenticeship and/or social support) no longer attend SEC's. (See Table 10 as evidence for no rebound in the number of SEC graduates after a license fee increase.)

Projecting the number of future SEC graduates is relatively difficult, but projecting the characteristics of future SEC graduates is more difficult for several reasons. First, although trends in sociodemographic factors such as urbanization, the proportion of minorities in the population, incidence of single-parent families, availability of alternative recreational and cultural activities for youth may be predicted with some degree of confidence, it is difficult to understand, let alone estimate, the impact of these changes on the likelihood of a person attending an SEC. Second, the most recent databases from which we can draw inferences about future projections were developed from data collected conveniently rather than randomly. Although these databases still provide information about the characteristics of SEC

¹³Changes in sociodemographic factors (e.g., increasing proportion of nonhunting minorities in the total population, increasing urbanization and increasing nonhunting population, increasing incidence of single-parent families where time for hunting is very limited) suggest that hunting participation is likely to decrease in the future (Decker et al. 1993). Our estimate of a stable number of persons attending SEC's over the next 12 years may be somewhat optimistic.

graduates, differences in sampling frameworks between the 1978 and 1983 studies on 1 hand, and the 1991 and 1992 screening instruments, on the other hand, make comparisons difficult. Third, future projections of sociodemographic factors need to be updated relatively frequently because of political, economic, and environmental events occurring worldwide. These kinds of events impact U.S. immigration policy, personal decisions about marriage and having children, and other factors which can change the future outlook for gender and age categories.

Based on information from recent and current SEC graduates, and projected changes in the gender and age structure of the total population, the gender and ageclass proportions of SEC graduates can be expected to change as shown in Table 14. The proportion who are female youth will increase from 5% to 6% over the next 12 years (Table 14). This is based on the low correlation between changes in the proportion of female youth in the total population and changes in the proportion of SEC graduates who are female youth. However, the 1991-92 trend in the population of female youth in SEC's increased very slightly. Combining these factors suggests that the near future trend likely will be stable to increasing.

The proportion of SEC graduates who are female adults will increase slightly for the next 5-6 years, then will return to its current level (Table 14). This is based on the assumption that the proportion of SEC graduates who are female adults is slightly affected by changes in the proportion of female adults in the total population. According to Census Bureau data (Dep. Commerce 1990) the proportion of female adults in the total population is expected to increase slightly for the next 7 years, and then decrease. Also, the 1991-92 trend in the proportion of female adults in SEC's remained

Table 14. Projected proportion of Sportsmen's Education Course graduates by gender and ageclass for the period 1994-2005.

Gender	Ageclass	Year											
		94	95	96	97	98	99	00	01	02	03	04	05
Female	Youth	0.05	0.05	0.05	0.05	0.05	0.06	0.06	0.06	0.06	0.06	0.06	0.06
Female	Adult	0.08	0.09	0.09	0.09	0.10	0.10	0.10	0.09	0.09	0.08	0.08	0.07
Male	Youth	0.50	0.48	0.46	0.44	0.42	0.41	0.40	0.40	0.41	0.42	0.42	0.42
Male	Adult	<u>0.37</u> 1.00	<u>0.38</u> 1.00	<u>0.40</u> 1.00	<u>0.42</u> 1.00	<u>0.43</u> 1.00	<u>0.43</u> 1.00	<u>0.44</u> 1.00	<u>0.45</u> 1.00	<u>0.44</u> 1.00	<u>0.44</u> 1.00	<u>0.44</u> 1.00	<u>0.45</u> 1.00

relatively stable. Thus, the near-future trend likely will be a slight increase followed by a slight decrease to account for changes in female adults in the total population.

The proportion of SEC graduates who are male youth will decrease from about 50% to 40% over the next 7 years, and then increase to about 42% over the following 3-5 years (Table 14). This is based on an expected change in the proportion of male youth in the total population and the recent decreasing trend in the proportion of male youth in SEC's. The proportion of male youth in the total population is projected to remain stable for the next 7 years, and then increase slightly over the following 3-5 years. The recent trend in the proportion of male youth was a decreasing one. Thus, the near-future trend likely will be decreasing somewhat as a continuation of the recent trend. This may be followed by an increase related to the increase in male youths in the total population.

The proportion of SEC graduates who are male adults will increase from 37% to 45% over the next 8 years, and then will decrease slightly over the following 2-3 years (Table 14). The proportion of SEC graduates who are male adults does not seem to be affected by the proportion of male adults in the total population. Thus, no corrections were made related to the Census Bureau data (Dep. Commerce 1990). However, the 1991-92 trend in the proportion of male adults was an increasing one, so the near-future trend likely will be increasing somewhat.

Projected Proportion of SEC Graduates who will be Candidates for the Program.--Best estimates of the proportion of SEC graduates (by gender and age category) who will qualify for the program each year over the next 12 years are the proportions identified in Regions 3 and 8 (combined) in 1992 (Table

15). Changes in proportions are likely to occur over the 12-year projection period because of sociodemographic trends occurring in society. However, it is not possible to predict what those changes might be. Thus, a constant proportion was chosen as a best estimate. If a license fee increase goes into effect, the proportion of candidates likely will change for some or all gender and age categories as the least interested persons lose interest in attending an SEC.

Estimated Number of Candidates for the Apprentice Hunter Program, 1994-2005.--Each year for the next 12 years, between 13,700 and 14,600 candidates may be identified via screening instruments distributed at SEC's statewide (Table 16). This estimate of the number of candidates was calculated following the general model shown in Table 9 and Appendix D. The reader is cautioned that this appears to be the best estimate. However, it is not possible to place a confidence interval around it because of the adjustments made to intermediate estimates used in the calculation (e.g., estimates of the number of SEC graduates to be expected each year, estimates of the proportion of SEC graduates by age and gender, estimates of the proportion of graduates who will be candidates for the Apprentice Hunter Program).

Because many of the candidates have family members who hunt (but were selected because they have had no apprenticeship experience, or because they were unsure about whether they would hunt in the future), up to one-half of the candidates may decline to participate in the program. Implementation staff recently have increased efforts to identify candidates through mechanisms other than screening instruments distributed at SEC's. These efforts are likely to increase in the future, and that will increase the

Table 15. Proportion of Sportsmen's Education Course graduates, by ageclass and gender, who were candidates for the Apprentice Hunter Program in 1992.

<u>Gender</u>	<u>Age</u>	<u>Proportion of SEC grads who were candidates in 1992</u>
Female	Youth	0.77
Female	Adult	0.69
Male	Youth	0.47
Male	Adult	0.57

Table 16. Estimate of the statewide number of candidates (youth and adults) for the Apprentice Hunter Program, 1994-2005. The total estimate was the sum of the estimates of candidates in each of the 4 age and gender categories. The estimate for each category was calculated by multiplying the total estimated number of Sportsmen's Education Course (SEC) graduates in each year (column B) by the estimated proportion of SEC graduates in that age and gender category (column C), and then multiplying that number (column D) by the estimated proportion of candidates for that age and gender category (column E).

A	B	C	D	E	F
	Total SEC enrollment without license fee increase	Estimated proportion of female youth in SEC's	Estimated number of female youth in SEC's	Estimated proportion of female youth AHP candidates	Estimated number of female youth AHP candidates
<u>Year</u>					
1994	27,000	0.05	1,350	0.77	1,040
1995	26,800	0.05	1,340	0.77	1,032
1996	26,600	0.05	1,330	0.77	1,024
1997	26,400	0.05	1,320	0.77	1,016
1998	26,200	0.05	1,310	0.77	1,009
1999	26,000	0.06	1,560	0.77	1,201
2000	25,800	0.06	1,548	0.77	1,192
2001	25,600	0.06	1,536	0.77	1,183
2002	25,400	0.06	1,524	0.77	1,173
2003	25,200	0.06	1,512	0.77	1,164
2004	25,000	0.06	1,500	0.77	1,155
2005	25,000	0.06	1,500	0.77	1,155

Table 16. cont.

A	B	C	D	E	F
	Total SEC enrollment without license fee increase	Estimated proportion of female adults in SEC's	Estimated number of female adults in SEC's	Estimated proportion of female adult AHP candidates	Estimated number of female adult AHP candidates
<u>Year</u>					
1994	27,000	0.08	2,160	0.69	1,490
1995	26,800	0.09	2,412	0.69	1,664
1996	26,600	0.09	2,394	0.69	1,652
1997	26,400	0.09	2,376	0.69	1,639
1998	26,200	0.10	2,620	0.69	1,808
1999	26,000	0.10	2,600	0.69	1,794
2000	25,800	0.10	2,580	0.69	1,780
2001	25,600	0.09	2,304	0.69	1,590
2002	25,400	0.09	2,286	0.69	1,577
2003	25,200	0.08	2,016	0.69	1,391
2004	25,000	0.08	2,000	0.69	1,380
2005	25,000	0.07	1,750	0.69	1,208

A	B	C	D	E	F
	Total SEC enrollment without license fee increase	Estimated proportion of male youth in SEC's	Estimated number of male youth in SEC's	Estimated proportion of male youth AHP candidates	Estimated number of male youth AHP candidates
<u>Year</u>					
1994	27,000	0.50	13,500	0.47	6,345
1995	26,800	0.48	12,864	0.47	6,046
1996	26,600	0.46	12,236	0.47	5,751
1997	26,400	0.44	11,616	0.47	5,460
1998	26,200	0.42	11,004	0.47	5,172
1999	26,000	0.41	10,660	0.47	5,010
2000	25,800	0.40	10,320	0.47	4,850
2001	25,600	0.40	10,240	0.47	4,813
2002	25,400	0.41	10,414	0.47	4,895
2003	25,200	0.42	10,584	0.47	4,974
2004	25,000	0.42	10,500	0.47	4,935
2005	25,000	0.42	10,500	0.47	4,935

Table 16. cont.

A	B	C	D	E	F
	Total SEC enrollment without license fee increase	Estimated proportion of male adults in SEC's	Estimated number of male adults in SEC's	Estimated proportion of male adult AHP candidates	Estimated number of male adult AHP candidates
<u>Year</u>					
1994	27,000	0.37	9,990	0.57	5,694
1995	26,800	0.38	10,184	0.57	5,805
1996	26,600	0.40	10,640	0.57	6,065
1997	26,400	0.42	11,088	0.57	6,320
1998	26,200	0.43	11,266	0.57	6,422
1999	26,000	0.43	11,180	0.57	6,373
2000	25,800	0.44	11,352	0.57	6,471
2001	25,600	0.45	11,520	0.57	6,566
2002	25,400	0.44	11,176	0.57	6,370
2003	25,200	0.44	11,088	0.57	6,320
2004	25,000	0.44	11,000	0.57	6,270
2005	25,000	0.45	11,250	0.57	6,413

Total statewide estimate for all age and gender categories for all 12 years:

<u>Year</u>	<u>Female Youth</u>	+	<u>Female Adults</u>	+	<u>Male Youth</u>	+	<u>Male Adults</u>	=	<u>Total</u>
1994	1,040		1,490		6,345		5,694		14,569
1995	1,032		1,664		6,046		5,805		14,547
1996	1,024		1,652		5,751		6,065		14,492
1997	1,016		1,639		5,460		6,320		14,435
1998	1,009		1,808		5,172		6,422		14,411
1999	1,201		1,794		5,010		6,373		14,378
2000	1,192		1,780		4,850		6,471		14,293
2001	1,183		1,590		4,813		6,566		14,152
2002	1,173		1,577		4,895		6,370		14,015
2003	1,164		1,391		4,974		6,320		13,849
2004	1,155		1,380		4,935		6,270		13,740
2005	1,155		1,208		4,935		6,413		13,711

number of candidates who can be identified for the program¹⁴. Nonetheless, the estimate of the number of candidates which is given above provides a target number for implementation staff who are charged with recruiting master hunters.

Supply of Master Hunter Volunteers

Supply of master hunters involves (1) recruitment of new master hunters to be paired with apprentices identified in the future, and (2) retention of master hunters who will be finishing the year-long pairing with their current apprentice, and who will be ready to take on a new apprentice in the future. Recruitment of new master hunters has slowed considerably in recent months, with no new master hunters identified between February 1993 and August 1993. Nonetheless, as of 1 August, 25 and 8 master hunters are trained and unpaired in Regions 3 and 8, respectively.

Discussions with master hunters who are currently paired with apprentices indicated that 70-80% of master hunters in each Region will continue in the program after their initial apprentice "graduates." Some current master hunters will be leaving the area, and will not be able to continue participation. Others have decided they do not have the required time or skills to be an effective master hunter.

Together, the number of retained and recruited but unpaired master hunters will total approximately 42 in Region 3 and 28 in Region 8 as of 1 September. This will result in an expected shortfall of master hunters considering that 919 and 1,532 youth apprentices are estimated to be identified during 1993 in the 2 pilot Regions, respectively, if screening

¹⁴Very crude estimates suggest that the number of candidates who do not attend SEC's may equal the number of those who do.

instruments are distributed to all SEC's. Even if only one-half of the youth candidates agree to participate, significant additional efforts will be needed to recruit more master hunters.

Cost-Benefit Analysis

There are both economic and noneconomic costs and benefits associated with the Apprentice Hunter Program, and all individuals and groups associated with the program have experienced both types of costs and benefits from their involvement. This report addresses both types. However, because economic data were not available for individuals or groups other than DEC, we provide an economic analysis only as it pertains to DEC. Thus, we separate the discussion into 2 sections: (1) unquantified costs and benefits, and (2) quantified costs and benefits.

Unquantified Costs and Benefits.--Interviews with apprentices indicate that the youth recognize and accrue a wide range of benefits from their participation in the program. Perhaps the greatest recognized benefit is the opportunity for apprentices to build on their interests in hunting and conservation that they otherwise would not have had. One apprentice said, "it lets kids learn so they don't have to wait until they're 16 or 18...it gives us an advantage because we have the experience other kids don't have." Another said, "its a good opportunity for kids to get out with people who know what they are doing, so we can learn from them."

Parents of apprentices also recognize benefits from the program. One mother indicated that her son's reading skills had improved from reading hunting magazines given to him by his master hunter. Another indicated that the program provided her son with a way to learn about hunting that she could

not provide. Several single parents commented that the program satisfied their need for a male role model for their sons.

Program participants also incur costs, even if those costs are not quantified. This recognition helps provide a full context for understanding success or failure of the program. Costs related to the purchase of hunting equipment by apprentices and their families, and their participation in various program activities are relatively easy to recognize. Also easy to recognize is the time that apprentices and their families have contributed to the program (i.e., opportunity costs) vs. their participation in other activities.

Perhaps 1 of the most important noneconomic costs to the apprentices, and 1 that is less easy to recognize, is the cost associated with unmet expectations. Some 12-13 year-old apprentices are not able to hunt legally with their master hunters because the apprentices' parents do not or will not accompany them afield. These apprentices expected to be able to hunt as part of their participation in the program. Because they cannot legally hunt, they have been very disappointed. The impact of this disappointment on their future hunting participation is not known at this time, but should be assessed as the evaluation continues.

Master hunters are a key element in the implementation of the program, and they experience both benefits and costs because of their efforts. Interviews with master hunters indicate that they recognize a wide range of personal benefits. One master hunter said he enjoys participating in the program because "it gives master hunters a chance to gain self-esteem as a mentor." Another said, "I have young children and it's a good experience until my own children are ready to hunt." Many master hunters also say they

"feel good" about helping to pass on the tradition of hunting through the program.

Besides accruing a wide range of personal benefits, master hunters also incur costs. They have out-of-pocket expenses for meals, gas, entrance fees to sportsman's shows, and in some cases, hunting equipment that they would not have if they did not participate in the program. They also give volunteer time to the program. Implementation staff recognize that these unquantified costs exist for master hunters, and staff are appreciative that master hunters are willing to incur costs without financial compensation. Whether apprentices and their parents recognize or appreciate that master hunters incur these costs is unknown.

In addition to the individuals participating in the program, participating groups also experience costs and benefits. Some groups which offer at-cost activities for apprentices and master hunters benefit from increased exposure of their group and concomitant increased membership. These groups also experience enhanced public relations because they are involved in a program targeted at helping youth. Members of other groups which support the program report they personally "feel good doing something for youth."

However, participating groups also experience costs. Other members of sportsmen's clubs (i.e., persons who are not master hunters) bear the cost of free or reduced-cost apprentice participation at club-sponsored events. Other types of costs also are incurred, too. A very few groups have spent considerable energy posturing with other groups to receive the most credit for supporting the program. In some cases, this posturing has led to hard feelings and political backlash between sportsmen's groups, and has had an effect on other programs. It is not DEC's responsibility to prevent these

kinds of costs to groups, but DEC needs to be aware that actions that lead to these costs likely will occur and can affect the ability of individuals or groups, including DEC, to provide adequate support for the Apprentice Hunter Program and other programs.

One program cost which DEC may be able to work with sportsmen's groups to overcome pertains to the issue of liability. Master hunters are covered by DEC's liability approach, but apprentices are not. Apprentices' guests are not covered either. Some sportsmen's organizations refuse to offer their facilities for program activities because of the risk of experiencing a lawsuit from damage or an accident involving an apprentice. For these groups, the risk of a lawsuit outweighs all potential benefits of participation.

In addition to individual participants and supporting groups, DEC also is accruing noneconomic benefits from its interactions with others involved in the program. One of the most important noneconomic benefits to DEC is the establishment of working relationships with affiliates of the Coalitions for Youth. For many years, DEC has had mechanisms in place for working with sportsmen's groups (e.g., through the New York State Conservation Council and County sportsmen's federations). However, new working relationships are being established between DEC and other organizations interested in youth and conservation issues, especially in Region 3 where Coalition membership includes representatives from the Boy Scouts of America, Inc., Wildlife Rehabilitators, Soil and Water Conservation Districts, Cornell Cooperative Extension (4-H Shooting Sports, and Sportfishing and Aquatic Resources Education Program [SAREP]), and Audubon Adventures (National Audubon Society). All affiliated groups seem to be benefitting from these new working relationships. DEC seems to be benefitting from having these groups better

understand each other's youth programs (including DEC's), and from recognition by these groups of DEC's role as catalyst to help these programs be more successful.

DEC staff also recognize the potential for the Coalitions associated with the Apprentice Hunter Program to be models for developing other kinds of mentoring programs for youth (e.g., birding, general environmental issues). Programs that build upon the Apprentice Hunter model could expand outside the Bureau of Wildlife and involve other DEC Bureaus or Divisions.

Preliminary Estimates of Quantified Costs.--I calculated DEC's expected economic costs associated with implementation of the program on a statewide basis by using estimates of the number of apprentices expected to participate per year (from this report) and cost information from Jacobs and Nash (1993:31-36). Recall from Table 16 that about 6,500 (5,996-7,385) potential youth apprentices may be identified statewide via screening instruments each year for the next 12 years. Based on the experiences of implementation staff during the pilot, only about 20% (18-27%) of identified apprentices are expected to be reachable and agreeable to participate (see pages 16-17). Implementation staff believe that 4 program leaders will be needed to put the program into action statewide (i.e., 1 leader for each of the following groups of Regions: 1-2, 3-4, 5-6, and 7-8-9). Cost calculations are shown below:

6,500	(average number of youth expected to be identified statewide per year)
x 0.20	(proportion reachable and agreeing to participate)
1,300	(estimated number of youth expected to participate statewide per year)
\$32,200	(estimated cost to implement the program per program leader)
x 4	(number of program leaders)
\$128,800	(estimated cost to implement the program statewide)

From these calculations:

$$\frac{\$128,800}{1,300} = \$99 \text{ (estimated cost to implement the program per youth)}$$

Note: The estimated cost per student could be reduced considerably if a greater number of apprentices was included in the program. As noted previously, implementation staff have developed several auxiliary methods of identifying potential apprentices, and it is likely that dozens of potential youth apprentices could be identified annually in each Region via these methods. In addition, nearly an equal number of adult apprentices as youth apprentices can be identified per year. Including twice as many apprentices should not increase the cost appreciably because <10% of the program cost is for materials.

Cost Per Apprentice Under Different Scenarios.--Without any programmatic intervention, Pomerantz and Decker (1986) suggested that 23% of youth without apprenticeship experience would be in the trial stage of hunting adoption and 11% of youth without apprenticeship experience would be in the continuation stage of hunting adoption. Pomerantz and Decker hypothesized that such persons in the trial and continuation stages of hunting adoption would purchase a hunting license (i.e., 34% of youth without apprenticeship experience would be retained for at least 2 years without intervention). During the pilot program, implementation staff made a concerted effort to screen out these people by disqualifying youth who already had hunted since taking the SEC. Thus, we assumed that no youth selected for inclusion in the program would be retained in the hunting population without intervention.

Because of this assumption, we could not expect the program to have a 100% success rate. Indeed, success may be very low. We conducted a

sensitivity analysis using the estimate of 1,300 youth apprentices participating in the program annually under the following 3 scenarios to assess cost per retained apprentice given a range of program success rates.

Scenario 1:

Assuming a 100% retention rate of youths during the year-long program, and 80% of youths retained in the hunting population in year 2:

$$1,300 \times .80 = 1,040 \text{ (estimated number of youth retained in year 2)}$$

$$\frac{\$128,800}{1,040} = \$123.85 \text{ (estimated annual cost of program per retained youth)}$$

Scenario 2:

Assuming a 100% retention rate of youths during the year-long program, and 60% of youths retained in the hunting population in year 2:

$$1,300 \times .60 = 780 \text{ (estimated number of youths retained in year 2)}$$

$$\frac{\$128,800}{780} = \$165.13 \text{ (estimated annual cost of program per retained youth)}$$

Scenario 3:

Assuming a 100% retention rate of youths during the year-long program, and 40% of youths retained in the hunting population in year 2:

$$1,300 \times .40 = 520 \text{ (estimated number of youths retained in year 2)}$$

$$\frac{\$128,800}{520} = \$247.69 \text{ (estimated annual cost of program per retained youth)}$$

We compared the cost of retaining 1 youth in the hunting population in year 2 with the revenue generated by licensed hunters to provide some context for these costs. Using \$11 as the cost of a resident small game license¹⁵

¹⁵Small game licenses currently cost \$11 annually. I chose to use small game licenses for this calculation so it would be comparable with the calculations for revenues generated through retention of youth. I had to use small game licenses in that calculation because youth <16 years of age can only hunt small game in New York.

and assuming scenario 1 is true above, it would take 11-12 licensed hunters to pay for 1 retained youth. Assuming scenario 2 is true, it would take 15-16 active small game hunters to pay for 1 retained youth. Finally, if only 40% of the youth in the program are retained (scenario 3), it would take 22-23 hunters buying a small game license to pay for 1 retained youth.

Pomerantz and Decker (1986) suggested up to one-third of youth who did not have apprenticeship experience and/or social support for hunting would purchase a license without programmatic intervention. However, implementation staff made an effort to disqualify those youth who went hunting after taking the SEC (i.e., those candidates who bought a license anyway were disqualified). We therefore assumed that no youth invited to participate in the program would become hunters without intervention. If that assumption is incorrect (i.e., if some program participants would have been retained for some number of years without their participation in the program), the estimated annual cost of the program per retained youth would be higher than the figures shown above.

Preliminary Estimates of Quantified Benefits.--I calculated expected economic benefits to DEC assuming that 1 of the 3 scenarios above was true and that none of the apprentices would have purchased a hunting license without the program. As noted in the 3 scenarios, 520-1,040 apprentices can be expected to purchase a hunting license the year after they complete the program. If each of these persons purchased a small game license, DEC can expect \$5,720-\$11,440 in increased revenues the first year. We assumed an annual 2% attrition rate of license buyers over a 10-year period (Pomerantz and Decker 1986). This would result in \$296,670-\$592,200 in accumulated revenues to DEC over a 10-year period (Table 17).

Table 17. Projected revenues from the Apprentice Hunter Program.

Assume a 2% attrition rate in each subsequent year, and each individual retained purchases a small game license annually for \$11.

Scenario 1: 1,040 youth apprentices complete the program in year 1.

<u>Year 1</u>	<u>Year 2</u>	<u>Year 3</u>	<u>Year 4</u>	<u>Year 5</u>	<u>Year 6</u>	<u>Year 7</u>	<u>Year 8</u>	<u>Year 9</u>	<u>Year 10</u>
\$11,440	11,209	10,989	10,769	10,549	10,340	10,131	9,933	9,735	9,537
	<u>11,440</u>	11,209	10,989	10,769	10,549	10,340	10,131	9,933	9,735
	22,649	<u>11,440</u>	11,209	10,989	10,769	10,549	10,340	10,131	9,933
		33,638	<u>11,440</u>	11,209	10,989	10,769	10,549	10,340	10,131
			44,407	<u>11,440</u>	11,209	10,989	10,769	10,549	10,340
				54,956	<u>11,440</u>	11,209	10,989	10,769	10,549
				65,296	<u>11,440</u>	<u>11,440</u>	11,209	10,989	10,769
						75,427	<u>11,440</u>	11,209	10,989
							85,360	<u>11,440</u>	11,209
								95,095	<u>11,440</u>
									104,632

Accumulated revenues over 10 years = \$592,900

Accumulated costs over 10 years = \$1,288,000

Table 17. continued.

Scenario 2: 780 youth apprentices complete the program in year 1.

<u>Year 1</u>	<u>Year 2</u>	<u>Year 3</u>	<u>Year 4</u>	<u>Year 5</u>	<u>Year 6</u>	<u>Year 7</u>	<u>Year 8</u>	<u>Year 9</u>	<u>Year 10</u>
\$8,580	8,404	8,239	8,074	7,909	7,755	7,601	7,447	7,293	7,150
	<u>8,580</u>	8,404	8,239	8,074	7,909	7,755	7,601	7,447	7,293
	16,984	<u>8,580</u>	8,404	8,239	8,074	7,909	7,755	7,601	7,447
		25,223	<u>8,580</u>	8,404	8,239	8,074	7,909	7,755	7,601
			33,297	<u>8,580</u>	8,404	8,239	8,074	7,909	7,755
				41,206	<u>8,580</u>	8,404	8,239	8,074	7,909
					48,961	<u>8,580</u>	8,404	8,239	8,074
						56,562	<u>8,580</u>	8,404	8,239
							64,009	<u>8,580</u>	8,404
								71,302	<u>8,580</u>
									78,452

Accumulated revenues over 10 years = \$444,576

Accumulated costs over 10 years = \$1,288,000

Table 17. continued.

Scenario 3: 520 youth apprentices complete the program in year 1.

<u>Year 1</u>	<u>Year 2</u>	<u>Year 3</u>	<u>Year 4</u>	<u>Year 5</u>	<u>Year 6</u>	<u>Year 7</u>	<u>Year 8</u>	<u>Year 9</u>	<u>Year 10</u>
\$5,720	5,610	5,500	5,390	5,280	5,170	5,071	4,972	4,873	4,774
	<u>5,720</u>	5,610	5,500	5,390	5,280	5,170	5,071	4,972	4,873
	11,330	<u>5,720</u>	5,610	5,500	5,390	5,280	5,170	5,071	4,972
		16,830	<u>5,720</u>	5,610	5,500	5,390	5,280	5,170	5,071
			22,220	<u>5,720</u>	5,610	5,500	5,390	5,280	5,170
				27,500	<u>5,720</u>	5,610	5,500	5,390	5,280
					32,670	<u>5,720</u>	5,610	5,500	5,390
						37,741	<u>5,720</u>	5,610	5,500
							42,713	<u>5,720</u>	5,610
								47,586	<u>5,720</u>
									52,360

Accumulated revenues over 10 years = \$296,670

Accumulated costs over 10 years = \$1,288,000

Even under scenario 1 (the most optimistic scenario), estimated program costs (quantified) far exceed estimated increases in revenues from license sales over the 10-year period examined.

The reader is cautioned to recognize that all programs have start-up costs, and may take a number of years before they reach a "break-even" point. The "break-even" point for the Apprentice Hunter Program, given the scenarios described above, likely will come after apprentices begin having children. Children of apprentices will be much more likely to take up hunting if apprentices complete the program because of the importance of family members as initiators of persons into hunting (Purdy et al. 1985, 1989). Thus, after program participants begin having children, and those children start entering the hunting population, there will be a multiplier effect of quantifiable benefits (i.e., license revenue).

This multiplier effect could happen very quickly if adults were included in the program. Some adults who would qualify for the program already have children of hunting age. If children of those adults became hunters because their parent(s) were in the program, immediate revenues could be experienced beyond just those from the adults themselves.

Obviously, some of the unquantified benefits offset some costs as well. We did not attempt to put a dollar figure on some of the benefits that DEC is accruing by jointly sponsoring the program. However, those benefits likely outweigh some of the program costs. The degree to which this is true depends on the weight that is placed on those unquantified benefits.

Balancing the Equation.--As noted in the previous section, several actions can be taken to increase the likelihood that the program will be cost-

effective solely from the perspective of quantified costs and benefits.

Potential mechanisms for cutting costs and/or increasing revenues include:

- (1) offer the program to adult apprentices (adults likely would purchase big game/small game combination licenses or sportsmen licenses which would increase revenues at a much faster rate than indicated in Table 17);
- (2) encourage adult apprentices to involve their children (this could be accomplished at no extra cost to the program if children accompany their parents and their parents' master hunter);
- (3) make additional effort to identify apprentices via auxiliary methods.
- (4) work more closely with Cornell Cooperative Extension to enhance program implementation efforts and share costs (i.e., use the Sportfishing and Aquatic Resources Education Program [SAREP] as a model);
- (5) improve on the 20% participation rate among potential apprentices identified via screening instruments; and
- (6) charge apprentices, master hunters, and/or sponsoring clubs for their participation in the program.

SUMMARY AND CONCLUSIONS

Implementation of the Apprentice Hunter Program has been a learning experience for all involved, and the formative evaluation process has enhanced the ability of the implementation staff to build on what has been experienced. As noted in Tables 2-8, mid-course changes were made in several of the implementation stages. The changes improved effectiveness of those particular implementation stages and increased opportunities for the program to be successful. In addition, valuable information was learned that implementation staff can apply as more apprentices and master hunters join the program.

Important insights were gained about all implementation stages covered in this report:

- The most advantageous way to recruit master hunters into the program is to use multiple recruiting methods which reach a wide audience of

potential master hunters and which take advantage of (1) personal contacts, (2) mass mailings to licensed hunters, or (3) articles in specific organizations' newsletters.

- Screening of SEC attendees will continue to be an important method of identifying potential apprentices, and personal contacts will be the most effective auxiliary method. Most other auxiliary methods are not effective because they require (1) self-selection by the potential apprentice, and (2) extra effort on the part of the potential apprentice to contact DEC about the program. In addition, because of the difficulties involved in identifying potential youth who have not yet taken an SEC, the program will benefit from additional effort being expended on making the program known to adults who are in the best position to identify potential apprentices (i.e., through Coalitions for Youth).
- Success and cost of the program will be increased by providing additional training about (1) the purpose of the program, and (2) how master hunters can best provide apprenticeship and social support to the youth. The most effective training is experiential in nature, and involves group discussion techniques or role playing during which master hunters' understanding of apprenticeship and social support are confirmed or refuted. Additional hands-on skills development will improve the usefulness of the master hunter training workshops.
- The most effective methods of notifying potential apprentices appear to be (1) direct telephone contacts, or (2) mailings followed closely by telephone follow-ups from implementation staff to the youth.
- Changes in how master hunters and apprentices are paired have placed added responsibilities on master hunters including (1) master hunters have become the official link between the program and apprentices' parents (i.e., master hunters and not implementation staff have become the official program representative), and (2) master hunters must help "sell" the program and must answer questions from the apprentices' parents about the program. These added responsibilities further demonstrate the importance of enhancing master hunter training to address these responsibilities.
- The program can be enhanced by providing more frequent communication between implementation staff and program participants. Also sponsorship of additional group activities for participants would provide opportunities for them to meet with other program participants and discuss their experiences. Much of this increased communication could be accomplished by the county coordinators being established by the implementation staff.
- Many master hunters and apprentices likely will not meet the requirement of meeting 15 times during their year-long program. Some participants have suggested that group activities sponsored by the program would help them achieve the requirement of getting together for 15 activities

during the year. Additionally, such program sponsorship would give more of an official program "feel" to the implementation process.

- Short-term goals pertaining to apprenticeship and social support are not being met fully. The most important impediment is a lack of understanding of these concepts among master hunters. Master hunters can become better mentors if they are provided additional training in the concepts of apprenticeship and social support.

Incorporation of these insights into the program implementation strategies will increase opportunity for program effectiveness.

Demand for the program is high. Up to 2,400 apprentices could be identified in the 2 pilot Regions via their participation in SEC's in 1993 although a much smaller number is likely to agree to participate. Additional efforts are needed to ensure that enough master hunters can be identified and trained. The Coalitions for Youth being established in the 2 Regions provide a mechanism for identifying additional youth who can benefit from the program, but who do not have an opportunity to attend an SEC. In addition, the Coalitions provide a mechanism for making potential master hunters aware of the program.

A wide range of potential costs and benefits may be accrued by all participants. Many of these cannot be quantified in economic terms. Some of the most important benefits to apprentices may be enhanced self-esteem and confidence. Master hunters also develop enhanced self-esteem and seem to enjoy taking actions to help pass the hunting heritage on to the next generation of hunters. One of the most important noneconomic benefits being accrued by DEC is the establishment of working relationships with affiliates of the Coalitions for Youth.

In economic terms, the program may not pay for itself until after the first 10 years unless several important actions are taken to reduce costs and increase the number of apprentices who participate. These actions include (1)

offering the program to adult apprentices; (2) encouraging adult apprentices to involve their children; (3) making additional effort to identify apprentices via auxiliary methods; (4) working more closely with Cornell Cooperative Extension to enhance program implementation efforts and share costs; (5) improving on the 20% participation rate among potential apprentices identified via screening instruments; and (6) charging apprentices, master hunters, and/or sponsoring clubs for their participation in the program. Using current cost estimates and expected numbers of apprentices participating, it would take each participant 11-23 years of buying small game licenses to "pay off" their participation in the program.

RECOMMENDATIONS

The recommendations listed are intended to enhance program success, and facilitate continued evaluation of the pilot program.

1. Distribute the screening instrument to the SEC (gun) instructors with other SEC materials until the screening instrument can be incorporated into the exam. Encourage SEC instructors to administer the screening instrument early in the SEC as a way of getting background information from the students. In addition, describe and promote the Apprentice Hunter Program during SEC instructor training workshops in the 2 pilot Regions.
2. Continue to develop sound mechanisms for identifying and contacting individuals who are in the interest stage of hunting adoption, but who do not have the opportunity to attend a SEC.
3. Use telephone contacts to invite screened candidates to participate in the program.
4. Develop a formal curriculum and handbook for the master hunter training workshops which emphasizes the concepts of apprenticeship and social support, and which uses experiential (i.e., hands-on) training to get the concepts across.
5. Provide a "refresher" course or event for master hunters where they can learn additional information about how they can provide apprenticeship and social support for youth. Feature successful experiences of other master hunters.

6. Collect gender data on the SEC rosters so better population modeling of hunters can be made.
7. Continue to develop Coalitions for Youth in the 2 Regions. Concentrate on 4 uses of these Coalitions from the perspective of the Apprentice Hunter Program: (1) as a mechanism for identifying candidate apprentices who have not yet attended an SEC, (2) as a mechanism for communicating with potential master hunters about the program, (3) as a set of organizations which master hunters can take advantage of when planning activities with their apprentices, and (4) as a means to offset program costs.
8. Move many of the implementation efforts to sportsmen groups. Much of the ground work has been laid for making the program a success. Sportsmen groups could take over much of the daily communication and event planning now being conducted by implementation staff, and DEC could continue to provide overall coordination and liaison with SEC instructors.
9. Complete the evaluation phase of this study with the current cohort of apprentices and master hunters. Survey current apprentices at the end of their year of participation to determine their attitudes about hunting and their stage of hunting adoption. Re-survey current apprentices after 2 years. Survey candidates who did not agree to participate to determine their attitudes about hunting and their stage of hunting adoption. Resurvey these individuals after 2 years, and compare this group with those who participated in the program.

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APPENDIX A. Types of activities in which master hunter/apprentice pairs have engaged in Regions 3 and 8 as part of New York's Apprentice Hunter Program.

studying for sportsmen's education
course

scouting for deer or turkeys
target shooting (bow and gun)
firearm safety discussions
trap and skeet shooting
sporting clays shooting
reloading shotgun shells
training hunting dogs
tuning archery tackle

small game hunting
big game hunting
predator hunting
visiting a deer check station
furbearer trapping

cleaning firearms
game meals
having dinner with apprentice's or
master hunter's family
skinning furbearers
attending a fur auction

watching hunting videos
attending gun shows
attending hunting seminars
sharpening hunting knives
reading magazines
visiting a gunsmith
attending sportsmen's club meetings
visiting a game farm

stream/pond fishing
ice fishing
attending a children's Christmas
party
watching car races
camping
bird watching
identifying trees
hiking
visiting State Parks
identifying wildlife sign
installed and checked wood duck
boxes
going afield with a forester
cross-country skiing
snowmobiling
cutting firewood
biking

APPENDIX B. Types of hunting in which master hunter/apprentice pairs have engaged in Regions 3 and 8, and types of game hunted, as part of New York's Apprentice Hunter Program.

Shotgun hunting

northern bobwhite
ruffed grouse
ring-necked pheasant
chukar partridge
turkey
waterfowl
American crow
gray squirrel
cottontail rabbit
white-tailed deer

Rifle hunting

gray squirrel
cottontail rabbit
red fox
white-tailed deer

Bowhunting

white-tailed deer

APPENDIX C. Types of hunting-related skills being developed by youth apprentices in New York's Apprentice Hunter Program.

identifying wildlife tracks
identifying wildlife foods
identifying game bedding areas
identifying waterfowl in flight

identifying wildlife sign
understanding wildlife movement patterns
understanding wildlife-habitat relationships
learning to move quietly afield

learning to use the wind advantageously
learning to minimize human scent afield
learning what clothing to wear afield
learning proper stand selection/placement

learning to ask permission to hunt on private land
learning to trap
learning to tune a bow
learning to call game

learning to identify one's target before shooting
learning what to do if lost
learning the proper way to hold a firearm or bow
considering hunting ethics and sportsmanship

considering hunting safety
becoming a more proficient marksman

APPENDIX D. Calculation for estimating the number of candidates (youth and adults) who would qualify for an Apprentice Hunter program in any given year.

Estimated number of candidates in a given year =

$$\begin{aligned}
 & ((\text{estimated number of SEC graduates in that year}) \times (\text{estimated proportion of female youth in SEC's in that year}) \times (\text{estimated proportion of female youth who will be candidates in that year})) \\
 + & ((\text{estimated number of SEC graduates in that year}) \times (\text{estimated proportion of female adults in SEC's in that year}) \times (\text{estimated proportion of female adults who will be candidates in that year})) \\
 + & ((\text{estimated number of SEC graduates in that year}) \times (\text{estimated proportion of male youth in SEC's in that year}) \times (\text{estimated proportion of male youth who will be candidates in that year})) \\
 + & ((\text{estimated number of SEC graduates in that year}) \times (\text{estimated proportion of male adults in SEC's in that year}) \times (\text{estimated proportion of male adults who will be candidates in that year})).
 \end{aligned}$$

Estimates of the number of SEC graduates for any given year can be based on the last year for which data exist, with adjustments for recent trends in the number of graduates, and adjusted for expected changes due to other factors such as license fee increases.

Estimates of the proportion of graduates by age and gender categories can be based on data from the last year in which a statewide sample of SEC graduates was surveyed. At present, only age data is tabulated by the office of the statewide sportsmen's education coordinator.

Estimates of the proportion of persons by age and gender who will be candidates for the program can be based on the last year for which candidacy was assessed.

